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967th Conference

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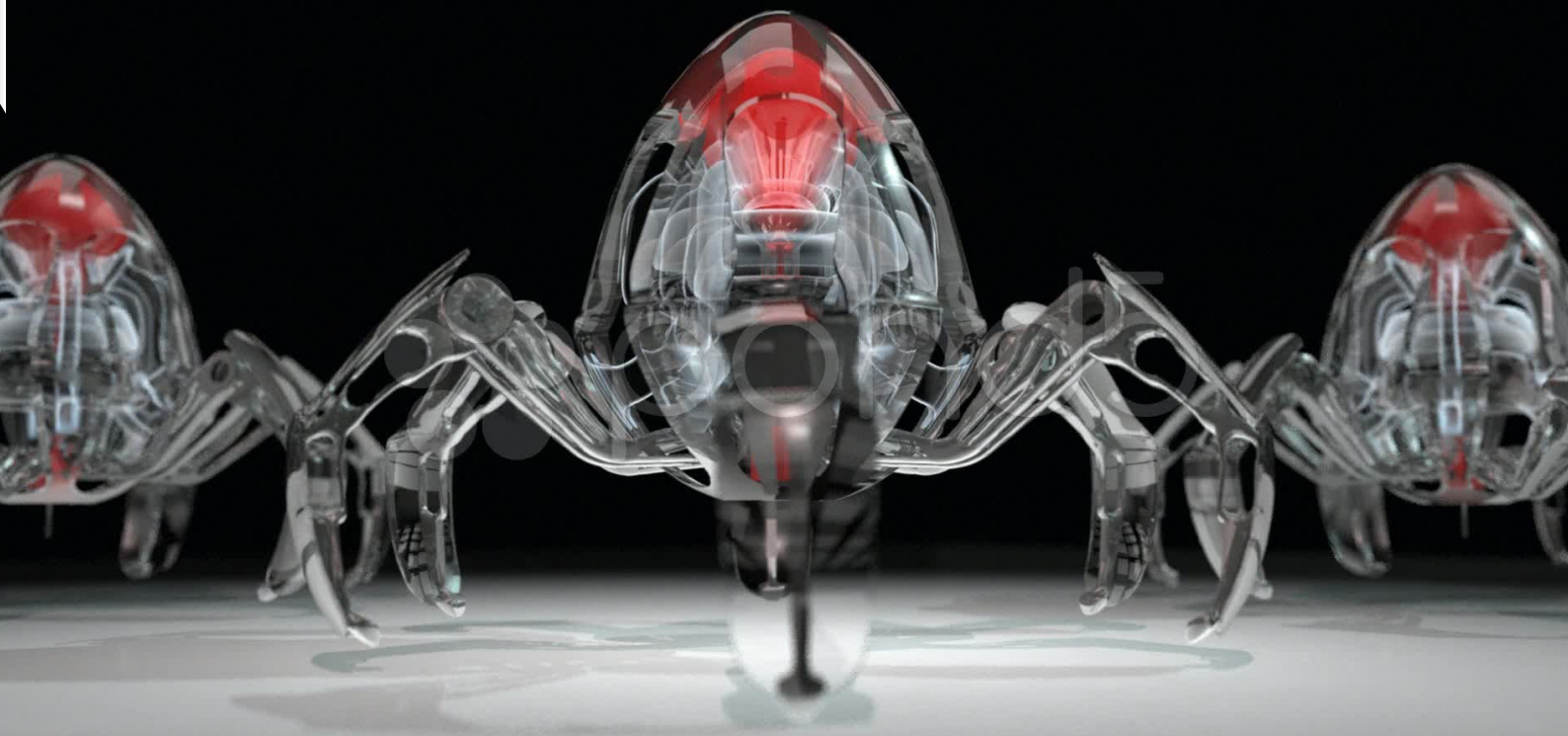
Journal of Nanomaterials & Molecular Nanotechnology
Open Access

Proceedings of

16th World Nano Conference

June 05-06, 2017 Milan, Italy



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Scientific Program

Nano 2017

Day 1 June 05, 2017

09:00-09:15 Registrations

Barcelona 1

conferenceseries.com 09:15-09:30 **Opening Ceremony**

Keynote Forum

Introduction

09:30-10:00 **Title: The causal link between Nano -Toxicology and human health: DNA damage by UV emission from nanoparticles**

Thomas Prevenslik, QED Radiations, China

10:00-10:30 **Title: S-Nitrosated human serum albumin dimer with superior antitumor activity, long blood retention and excellent EPR effect**

Masaki Otagiri, Sojo University, Japan

10:30-11:00 **Title: Tuning plasmon resonance of In_2O nanocrystals throughout mid-infrared: dopant, phase, and electronic structure dependence**

Pavle V. Radovanovic, University of Waterloo, Canada

Group Photo @ 11:00-11:05

Networking and Refreshment Break 11:05-11:20@ Foyer

11:20-11:50 **Title: Surface-engineered tungsten disulfide (WS_2) inorganic nanotubes (INTs-WS_2) – novel chemically modified nanoscale CNT-replacement inorganic "Nanofillers"**

Jean-Paul Lellouche, Bar-Ilan University, Israel

Plenary Session

11:50-12:20 **Title: Ensemble Monte Carlo methods and results for nanoscale Si and III-V n-channel FinFETs; non-equilibrium degenerate statistics, quantum-confined scattering and more**

Leonard F Register, University of Texas at Austin, USA

12:20-12:50 **Title: Defluorination-assisted nanotube-substitution reaction with ammonia gas for synthesis of nitrogen-doped single-walled carbon nanotubes**

Yoshinori Sato, Tohoku University, Japan

12:50-13:20 **Title: Novel silicon nano-objects**

María E Dávila, Instituto de Ciencia de Materiales de Madrid - ICMM - CSIC, Spain

Lunch Break 13:20-13:50 @ Restaurant

13:50-14:20 **Title: Metamaterial device design with the extended modal theory**

Nathalie Raveu, LAPLACE - Centre National de la Recherche Scientifique, France

14:20-14:50 **Title: Electrically driven nanogap optical antennas**

Claire Deeb, Centre de Nanoscience et de Nanotechnologies, France

14:50-15:20 **Title: A novel nanometric cubic phase in monochalcogenide semiconductors – theory and experiment**

Guy Makov, Ilse Katz Institute for Nanoscale Science and Technology, Israel

Panel Discussion

Sessions: Nanoscience and Technology | Nano Medicine | Nano Toxicology | Nanophotonics | Nano Composites | Nano Fluidics | Nanotechnology in Agriculture and Food Industry

Session Chair: Jean-Paul Lellouche, Bar-Ilan University, Israel

Session Co-chair: Masaki Otagiri, Sojo University, Japan

	Session Introduction
15:20-15:40	**Title: Nanotechnology in liver cancer** **Manfred George Krukemeyer,** Paracelsus-Hospital Osnabrueck, Germany
15:40-16:00	**Title: Probing atherosclerotic plaque permeability using fluorescent blood pool agents in ApoE$^{(-/-)}$ mouse model** **Claudia Cabella,** Bracco Imaging SpA, Italy
	Networking and Refreshment Break 16:00-16:15@ Foyer
16:15-16:35	**Title: Nanotechnology: Applications and risks** **Akbar S Khan,** Defense Threat Reduction Agency, USA
16:35-16:55	**Title:The fantastic voyage of nanoparticles targeting Aβ** **Giulio Sancini,** University of Milano-Bicocca, Italy
16:55-17:15	**Title: Secondary electron emission from carbon nanoparticles by electron impact** **Isabel Montero,** Instituto de Ciencia de Materiales de Madrid - ICMM - CSIC, Spain
17:15-17:35	**Title: Reactions of radicals at nanoparticles surfaces** **Tomer Zidki,** Ariel University, Israel
	YRF Session
	YRF Judge: Pavle V. Radovanovic, University of Waterloo, Canada
17:35-17:50	**Title: Preparation and characterization of prednisone and ciprofloxacin double layer-loaded chitosan nanoparticles for oral delivery** **Modan Wu,** Dublin Institute of Technology, Ireland
17:50-18:05	**Title: The cytoplasmic escape pathway of polyethylenimine coated nanoparticles is altered by changing the nanoparticle concentration** **Kepsutlu Burcu,** Helmholtz-Zentrum Berlin, Germany
18:05-18:20	**Title: Functions of antigen presenting cells can be altered by gold nanoparticles exposure** **Alexis Gonon,** Institute of Advanced Biosciences-University Grenoble Alpes, France
	Panel Discussion

Day 2 June 06, 2017

Keynote Forum

	Introduction
09:30-10:00	**Title: Band gap science for organic solar cells** **Masahiro Hiramoto,** Institute for Molecular Science, Japan
10:00 - 10:30	**Title: Transparent and conductive nanomaterials** **Daniel Bellet,** CNRS, France
10:30 - 11:00	**Title: Functional nanostructures and energy-driven water splitting** **Ming-Yong Han,** Institute of Materials Research and Engineering, Singapore
	Networking and Refreshment Break 11:00-11:15@ Foyer
	Plenary Session
11:15-11:45	**Title: Contact line dynamic of cassie-state wetting on ultrahydrophobic nano-structured surfaces** **Jiangtao Cheng,** Virginia Polytechnic Institute and State University, USA
11:45-12:15	**Title: Nanostructured supports design: a prospective way to modern catalysts constructing** **Vera I Isaeva,** National University of Science and Technology "MISiS", Russia
12:15-12:45	**Title: Copper nanoparticles: Retarding air-oxidation without electrical isolation using organic ligands, and the size dependence of nanoparticle work function** **Ross A Hatton,** University of Warwick, UK

12:45-13:15	**Title: Atomic-scale characterization of semiconductor nanowire surfaces during device operation** **Rainer Timm,** Lund University, Sweden

Lunch Break 13:15-13:45 @ Restaurant

Panel Discussion

Sessions: Nano Electronics | Nano Biotechnology | Nanotechnology in Water treatment | Advanced Nanomaterials | Nanotech for Energy and Environment | Nano Materials Synthesis and Characterisation | Nanobiomaterials

Session Chair: Masahiro Hiramoto, Institute for Molecular Science, Japan

Session Co-Chair: Daniel Bellet, CNRS, France

Session Introduction

13:45-14:05	**Title: The ILs-assisted solvothermal synthesis of TiO_2 spheres: The effect of ionic liquids on morphology and photoactivity of TiO_2** **Ewelina Grabowska,** University of Gdansk, Poland
14:05-14:25	**Title: Synthesis of highly active supported Pt nanostructure via thermo-destabilization of microemulsions** **Riny Yolandha Parapat,** Technical University of Berlin, Germany
14:25-14:45	**Title: One-pot synthesis of hydrophilic Nd^{3+}:$Ba_{0.3}Lu_{0.7}F_{2.7}$ nano spheres: Crystal structure, X-ray computed tomography and NIR luminescence** **Ana Isabel Becerro,** Instituto de Ciencia de Materiales de Sevilla (CSIC-US), Spain
14:45-15:05	**Title: Electrowetting actuation of polydisperse nanofluid droplets** **Crismar Patacsil,** University of the Philippines Diliman, Philippines
15:05-15:25	**Title: Application of nanoparticles as biomolecular carriers** **Laleh Alisaraie,** Memorial University, Canada
15:25-15:45	**Title: Enzymatic synthesis and characterization of metallic nanoparticles for targeted application on antimicrobial biodegradable polymers** **Iva Rezić,** University of Zagreb, Croatia
15:45-16:05	**Title: Light-driven reversible shaping on azopolymeric structures** **Francesca Frascella,** Politecnico di Torino, Italy

Networking and Refreshment Break 16:05-16:20@ Foyer

16:20-16:40	**Title: Effect of cold atmospheric plasma application on nano-TiN coated Co-Cr dental alloy** **Emre Seker,** Eskisehir Osmangazi University, Turkey
16:40-17:00	**Title: Effect of cold atmospheric plasma on collagen membrane surface** **Basak Kusakci Seker,** Eskisehir Osmangazi University, Turkey
17:00-17:20	**Title: Pulsed laser deposited doped Cu_2O thin films for optical application** **Gurpreet Kaur,** Dr. B. R. Ambedkar National Institute of Technology, India

Video presentation

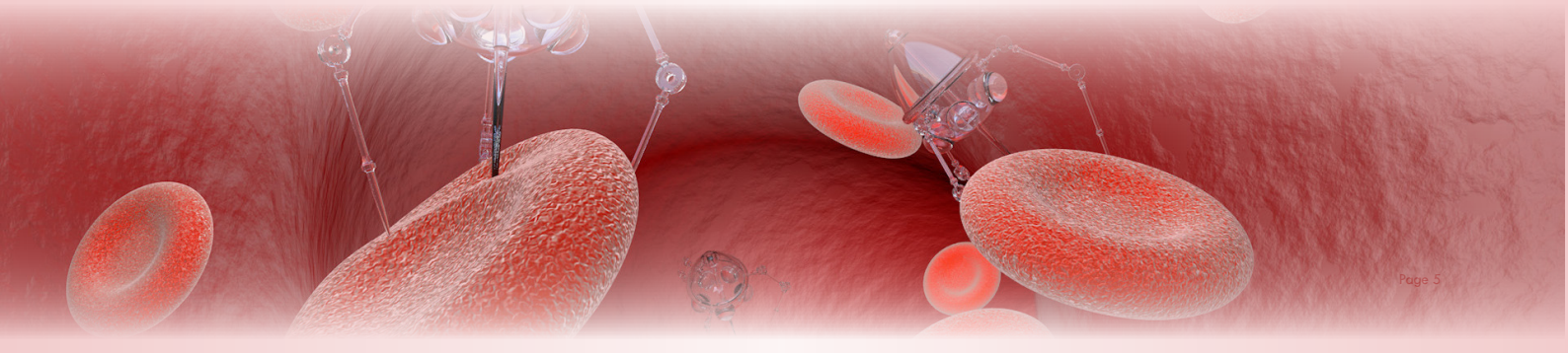
17:20-17:35	**Title: The effects of laser characteristics on melting of nano-particles on a surface** **Peng-Sheng Wei,** National Sun Yat-Sen University, Taiwan
17:35-17:50	**Title: Optical spin injection in atomic monolayers** **Norberto Arzate,** Centro de Investigaciones en Óptica, Mexico

Poster Presentations @ 17:50-18:20

Poster Judge: Yoshinori Sato, Tohoku University, Japan

Panel Discussion

Award & Closing Ceremony



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Advances in Dairy Research	2329-888X
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International Journal of Public Health and Safety	-
International Journal of School and Cognitive Psychology	-
Interventional Pediatrics	-
Invasive Cardiology Future Medicine	-
JBR Journal of Interdisciplinary Medicine and Dental Sciences	2376-032X
Kidney	-
Kidney Transplant	-
La Prensa Medica	0032-745X
Laser Surgery and Therapy	-
Leukemia	2329-6917
Liposuction	-
Liver	2167-0889
Liver: Disease & Transplantation	2325-9612
Lung Cancer Diagnosis & Treatment	-
Lung Diseases & Treatment	-
Malaria Control & Elimination	2090-2778
Maternal and Pediatric Nutrition	-
Medical & Surgical Pathology	-
Medical & Surgical Urology	2168-9857
Medical and Clinical Reviews	-
Medical Case Reports	-
Medical Diagnostic Methods	2168-9784
Medical Toxicology and Clinical Forensic Medicine	-
Melanoma and Skin Diseases	-
Mental Health in Family Medicine	2327-4972
Mental Illness and Treatment	-
Metabolic Syndrome	2167-0943
Molecular & Medical Histology	-
Molecular Medicine & Therapeutics	2324-8769
Neonatal Biology	2167-0897
Neonatal Studies	-
Neonatal Medicine	-
Neoplasm	-
Nephrology & Therapeutics	2161-0959
Neurobiotechnology	-
Neuroinfectious Diseases	2314-7326
Neurooncology: Open Access	-
Neurosurgery & Cardiac Surgery	-
Novel Physiotherapies	2165-7025
Nuclear Medicine & Radiation Therapy	2155-9619
Nutritional Disorders & Therapy	2161-0509
Obesity & Eating Disorders	-
Obesity & Weight Loss Therapy	2165-7904
Occupational Medicine Health Affairs	2329-6879
Omics Journal of Radiology	2167-7964
Oncology & Cancer Case Reports	-
Oncology Translational Research	-
Oral Health and Dental Management	2247-2452
Oral Health Case Reports	-
Oral Hygiene & Health	2332-0702
Orthodontics & Endodontics	-
Orthopedic & Muscular System: Current Research	2161-0533
Orthopedic Oncology	-
Osteoporosis & Physical Activity	2329-9509
Otolaryngology:Open Access	2161-119X
Otology & Rhinology	2324-8785
Pain & Relief	2167-0846
Pain Management & Medicine	-
Palliative Care & Medicine	2165-7386
Pancreatic Disorders & Therapy	2165-7092
Pediatric Care	-
Pediatric Dental Care	-
Pediatric Emergency Care and Medicine- Open Access	-
Pediatric Nephrology Practice	-
Pediatric Neurology and Medicine	-
Pediatric Nursing: Open Access	-
Pediatric Oncology: Open Access	-
Pediatric Physiotherapy	-
Pediatric Psychology and Psychiatry	-
Pediatrics & Therapeutics	2161-0665
Periodontics and Prosthodontics: Open Access	-
Pigmentary Disorders	2376-0427
Prevention Infection Control: Open Access	-
Preventive Medicine	-
Primary & Acquired Immunodeficiency Research	2324-853X
Prostate Cancer	-
Psoriasis & Rosacea Open Access	-
Psychiatry	2378-5756
Psychological Abnormalities in Children	2329-9525
Psychology & Psychotherapy	2161-0487
Pulmonary & Respiratory Medicine	2161-105x
Rare Disorders & Diseases	-
Regenerative Medicine	2325-9620
Reproductive Endocrinology & Infertility	-
Reproductive System & Sexual Disorders	2161-038x
Research & Reviews: Journal of Dental Sciences	2320-7949
Research & Reviews: Journal of Medical and Health Sciences	2319-9865
Research Journal of Biology	2322-0066
Sleep Disorders & Therapy	2167-0277
Sleep Disorders : Treatment & Care	2325-9639
Spine	2165-7939
Spine & Neurosurgery	2325-9701
Spine Research	-
Sports Medicine & Doping Studies	2161-0673
Sports Nutrition and Therapy	-
Steroids & Hormonal Science	2157-7536
Stroke Research & Therapy	-
Journal of Surgery [Jurnalul de Chirurgie]	1584-9341
Surgery: Current Research	2161-1076
The Headache Journal	-
The International Journal of Apitherapy	-
The Pancreas	1590-8577
Therapeutic Care and Physical Rehabilitation	-

Thrombosis and Circulation	-
Thyroid Disorders & Therapy	2167-7948
Translational Medicine	2161-1025
Transplant Reports : Open Access	-
Transplantation Technologies & Research	2161-0991
Trauma & Acute Care	-
Trauma & Treatment	2167-1222
Traumatic Stress Disorders & Treatment	2324-8947
Tropical Medicine & Surgery	2329-9088
Tumor Diagnostics and Reports	-
Universal Surgery	2254-6758
Vascular Medicine & Surgery	2329-6925
Vitiligo & Dermatomyositis	-
Voice Medicine & Surgery	-
Women's Health Care	2167-0420
Wound Medicine and Tissue Repair	-
Yoga & Physical Therapy	2157-7595

Microbiology

Advances in Influenza Research	-
Antimicrobial Agents	-
Antivirals & Antiretrovirals	1948-5964
Applied Microbiology: Open Access	-
Archives of Clinical Microbiology	1989-8436
Bacteriology and Parasitology	2155-9597
Clinical Infectious Diseases & Practice	-
Clinical Microbiology: Open Access	2327-5073
Colitis & Diverticulitis	-
Emerging Infectious Diseases	-
Fermentation Technology	2167-7972
Fibromyalgia: Open Access	-
Forensic Pathology	-
Hepatitis	-
Human Papillomavirus	-
Infectious Diseases and Diagnosis	-
Infectious Diseases and Therapy	2332-0877
Medical Microbiology & Diagnosis	2161-0703
Medical Mycology: Open Access	-
Meningitis	-
Mycobacterial Diseases	2161-1068
Pediatric Infectious Diseases: Open Access	-
Research & Reviews: Journal of Microbiology and Biotechnology	2320-3528
Research & Reviews: Journal of Inflammation	-
Research & Reviews: Journal of Pathology & Epidemiology	-
Virology & Mycology	2161-0517

Neuroscience

Addiction Research & Therapy	2155-6105
Alzheimers Disease & Parkinsonism	2161-0460
Autism-Open Access	2165-7890
Brain Disorders & Therapy	2168-975X
Child & Adolescent Behavior	2375-4494
Clinical & Experimental Neuroimmunology	-
Dementia & Mental Health	-
Epilepsy Journal	-
Insights in Clinical Neurology	-
International Journal of Neurorehabilitation	2376-0281
Multiple Sclerosis	2376-0389
Neurological Disorders	2329-6895
Neurology & Neurophysiology	2155-9562
Neurology and Neuroscience	2171-6625
Neuropsychiatry	-
Neuroscience & Clinical Research	-
Schizophrenia Journal	-

Health Care & Nursing

Advanced Practices in Nursing	-
Community & Public Health Nursing	-
Nursing & Care	2167-1168
Nursing & Clinical Research	-
Patient Care	-
Perioperative & Critical Intensive Care Nursing	-
Research & Reviews: Journal of Nursing and Health Sciences	-

Pharmaceutical Sciences

Advances in Pharmacoepidemiology & Drug Safety	2167-1052
Alcoholism & Drug Dependence	2329-6488
Bioanalysis & Biomedicine	1948-593X
Biochemistry & Pharmacology: Open Access Journal	2167-0501
Bioequivalence & Bioavailability	0975-0851
Biomarkers in Drug Development	2327-4441
Biomarkers Journal	-
Biomolecular Research & Therapeutics	2167-7956
Cardiovascular Pharmacology: Open Access	2329-6607
Clinical & Experimental Pharmacology	2161-1459
Clinical Pharmacology and Biopharmaceutics	2167-065X
Current Trends in Nutraceuticals	-
Developing Drugs	2329-6631
Diagnostic Techniques & Biomedical Analysis	-
Drug Designing: Open Access	2169-0138
Drug Metabolism & Toxicology	2157-7609
in Silico & in Vitro Pharmacology	-
Molecular Enzymology and Drug Targets	-
Molecular Pharmaceutics & Organic Process Research	2329-9053
Pharmaceutica Analytica Acta	2153-2435
Pharmaceutical Care & Health Systems	2376-0419
Pharmaceutical Microbiology	-
Pharmaceutical Regulatory Affairs: Open Access	2167-7689
Pharmaceutical Sciences & Emerging Drugs	-
Pharmaceutics & Drug Delivery Research	2325-9604
Pharmacoeconomics: Open Access	-
Pharmacogenomics and Pharmacoproteomics	2153-0645
Pharmacognosy & Natural Products	-
Pharmacokinetics & Experimental Therapeutics	-
Pharmacological Reports	-
Pharmacovigilance	2329-6887
Research & Reviews: Journal of Hospital and Clinical Pharmacy	-
Research & Reviews: Journal of Pharmaceutical Analysis	2320-0812
Research & Reviews: Journal of Pharmaceutical Quality Assurance	-
Research & Reviews: Journal of Pharmaceutics and Nanotechnology	2347-7857
Research & Reviews: Journal of Pharmacognosy and Phytochemistry	2321-6182
Research & Reviews: Journal of Pharmacy and Pharmaceutical Sciences	2320-1215
Virology & Antiviral Research	2324-8955

Physics

Astrophysics & Aerospace Technology	2329-6542
Research & Reviews: Journal of Pure and Applied Physics	2320-2459
Vortex Science and Technology	2090-8369

Social & Political Sciences

Anthropology	2332-0915
Arts and Social Sciences Journal	2151-6200
Civil & Legal Sciences	2169-0170
Forensic Anthropology	-
Global Media Journal	1550-7521
Intellectual Property Rights: Open Access	2375-4516
Mass Communication & Journalism	2165-7912
Political Science & Public Affairs	2332-0761
Research & Reviews: Journal of Educational Studies	-
Research & Reviews: Journal of Social Sciences	-
Socialomics	2167-0358
Sociology & Criminology	2375-4435

Veterinary Sciences

Animal Nutrition	-
Primatology	2167-6801
Research & Reviews: Journal of Veterinary Sciences	-
Research & Reviews: Journal of Zoological Sciences	2321-6190
Veterinary Science & Medical Diagnosis	2325-9590
Veterinary Science & Technology	2157-7579

Impact Factors* (IF)

Journal Name	Pubmed Short Name	Impact Factor
Biological Systems: Open Access	Biol Syst Open Access	0.76
Journal of Biotechnology & Biomaterials	J Biotechnol Biomater	1.94
Journal of Psychology & Psychotherapy	J Psychol Psychother	1.3
Advanced Techniques in Biology & Medicine	Adv Tech Biol Med	1.08
AIDS & Clinical Research	J AIDS Clin Res	2.7
Autism Open Access	Autism Open Access	3.52
Biochemistry & Physiology: Open Access	Biochem Physiol	1.03
Diversity Equality in Health & Care	Divers Equal Health Care	2.49
Drug Designing: Open Access	Drug Des	6
Fungal Genomics & Biology	Fungal Genom Biol	1.15
International Journal of Genomic Medicine	Int J Genomic Med	0.67
Journal of Addiction Research & Therapy	J Addict Res Ther	2.86
Journal of Alzheimers Disease & Parkinsonism	J Alzheimers Dis Parkinsonism	1.18
Journal of Fertilization: In Vitro	JFIV Reprod Med Genet	1
Journal of Genetic Syndromes & Gene therapy	J Genet Syndr Gene Ther	2.34
Journal of Microbial & Biochemical Technology	J Microb Biochem Technol	2.5
Journal of Nursing & Care	J Nurs Care	1.6
Journal of Osteoporosis and Physical Activity	J Osteopor Phys Act	0.66
Journal of Yoga & Physical Therapy	J Yoga Phys Ther	1.17
Molecular Biology	Mol Biol	1.85
Neurology & Neurophysiology	J Neurol Neurophysiol	0.77
Primary health care	Prim Health Care	1
Quality in Primary Care	Qual Prim Care	3.88
Tissue Science & Engineering	J Tissue Sci Eng	2.72
Biochemistry & Analytical Biochemistry	Biochem Anal Biochem	2.6
Molecular and Genetic Medicine	J Mol Genet Med	2.89
Advancements in Genetic Engineering	Adv Genet Eng	1
Enzyme Engineering	Enz Eng	2.3
Depression and Anxiety	J Depress Anxiety	1
Human Genetics & Embryology	Human Genet Embryol	1.2
Current Synthetic and Systems Biology	Curr Synthetic Sys Biol	0.8
Hereditary Genetics: Current Research	Hereditary Genet	1.2
International Journal of Emergency Mental Health and Human Resilience	Int J Emerg Ment Health	6.5
Spine	J Spine	1.9
Cloning & Transgenesis	Clon Transgen	1.5
Journal of Medical Microbiology & Diagnosis	J Med Microb Diagn	1.9
Biosensors Journal	Biosens J	0.33
Defense Management	J Def Manag	0.5
Review of Public Administration and Management	Review Pub Administration Manag	0.2
Single cell biology	Single Cell Biol	1
Gerontology & Geriatric Research	J Gerontol Geriatr Res	1
Neuroinfectious Diseases	J Neuroinfect Dis	2.4
Cell Science & Therapy	J Cell Sci Ther	1.37
Molecular Biomarkers & Diagnosis	J Mol Biomark Diagn	2.1
Brain Disorders & Therapy	Brain Disord Ther	1.6
Clinical Case Reports	J Clin Case Rep	1.2
Gene Technology	Gene Technol	0.83
Socialomics	J Socialomics	2.3
Journal of Trauma and Treatment	J Trauma Treat	0.6
Translational Biomedicine	Transl Biomed	1.06
Journal of Neurology and Neuroscience	J Neurol Neurosci	0.88
Research & Reviews: Journal of Botanical Sciences	J Bot Sci	0.33
Journal of Psychiatry	J Psychiatry	2.32
Anaplastology	Anaplastology	0.73
Tropical Medicine & Surgery	Trop Med Surg	0.4
Orthopedic & Muscular System: Current Research	Orthop Muscular Syst	0.32
Pediatrics & Therapeutics	Pediat Therapeut	1.32
Sports Medicine & Doping Studies	J Sports Med Doping Stud	1.45
Journal of Oral Hygiene & Health	J Oral Hyg Health	0.52
Emergency Medicine	Emerg Med (Los Angel)	0.875
Journal of Transplantation Technologies & Research	J Transplant Technol Res	1.39
Journal of Hypertension: Open Access	J Hypertens (Los Angel)	0.92
International Journal of Waste Resources	Int J Waste Resour	1.95
Surgery: Current research	Surgery Curr Re	0.587
Oral Health and Dental Management	Oral Health Dent Manag	1.23
International Journal of Advancement technology	Int J Adv Tech	5.08
Translational Medicine	Transl Med (Sunnyvale)	1.312
Air and Water Borne Diseases	Air Water Borne Diseases	0.6
Journal of Coastal Zone Management	J Coast Zone Manag	0.54
Biology and Medicine	Biol Med (Aligarh)	3.07
Journal of Bioterrorism and Biodefense	J Bioterror Biodef	0.38
Journal of Tropical Diseases & Public Health	J Trop Dis	0.83
Journal of Surgery	Journal of Surgery [Jurnalul de chirurgie]	0.08
Nephrology & Therapeutics	J Nephrol Ther	0.318
Journal of Fundamentals of Renewable Energy and Applications	J Fundam Renewable Energy Appl	1.41
Advances in Pharmacoepidemiology & Drug Safety	Adv Pharmacoepidemiol Drug Saf	1.37
Bioanalysis & Biomedicine	J Bioanal Biomed	1.67
Biochemistry & Pharmacology: Open Access	Biochem Pharmacol (Los Angel)	2.09
Bioequivalence & Bioavailability	J Bioequiv Availab	1.88
Biomolecular Research & Therapeutics	J Biomol Res Ther	1.67
Cardiovascular Pharmacology: Open Access	Cardiol Pharmacol	1.77
Clinical & Experimental Pharmacology	Clin Exp Pharmacol	1.83
Clinical Pharmacology & Biopharmaceutics	Clin Pharmacol Biopharm	1.69
Data Mining in Genomics & Proteomics	J Data Mining Genomics Proteomics	2
Drug Metabolism & Toxicology	J Drug Metab Toxicol	1.37
Ergonomics	J Ergonomics	1.38
Glycomics & Lipidomics	J Glycomics Lipidomics	1.82
Health & Medical Informatics	J Health Med Inform	1.98
Metabolomics: Open Access	Metabolomics (Los Angel)	3.03
Nanomedicine & Biotherapeutic Discovery	J Nanomedine Biotherapeutic Discov	2.69
OMICS Journal of Radiology	OMICS J Radiol	0.54
Pharmaceutica Analytica Acta	Pharm Anal Acta	1.83
Pharmaceutical Regulatory Affairs: Open Access	Pharm Regul Aff	1.88
Pharmacogenomics & Pharmacoproteomics	J Pharmacogenomics Pharmacoproteomics	1.69
Pharmacovigilance	J Pharmacovigil	2.65
Phylogenetics & Evolutionary Biology	J Phylogenetics Evol Biol	2.76
Proteomics & Bioinformatics	J Proteomics Bioinform	2.55
Advances in Automobile Engineering	Adv Automob Eng	1.750
Advances in Robotics & Automation	Adv Robot Autom	0.813
Arts and Social Sciences Journal	Arts Social Sci J	1.231
Bioceramics Developments and Applications	Bioceram Dev Appl	0.958
Business & Financial Affairs	J Bus & Fin Aff	2.000
Generalized Lie Theory and Applications	J Generalized Lie Theory Appl	1.750
Irrigation & Drainage Systems Engineering	Irrigat Drainage Sys Eng	4.286
Industrial Engineering & Management	Ind Eng Manage	0.474
Aeronautics & Aerospace Engineering	J Aeronaut Aerospace Eng	1.407
Applied & Computational Mathematics	J Appl Computat Math	0.581
Architectural Engineering Technology	J Archit Eng Tech	1.071
Accounting & Marketing	J Account Mark	0.500
Aquaculture Research & Development	J Aquac Res Development	1.272
Bioengineering & Biomedical Science	J Bioeng Biomed Sci	1.235
Biometrics & Biostatistics	J Biomet Biostat	1.272
Biosensors & Bioelectronics	J Biosens Bioelectron	2.137
Civil & Environmental Engineering	J Civil Environ Eng	1.294
Cytology & Histology	J Cytol Histol	0.569
Civil & Legal Sciences	J Civil Legal Sci	0.286
Ecosystem & Ecography	J Ecosyst Ecogr	1.806
Electrical & Electronic Systems	J Elec Electron Syst	0.533
Earth Science & Climatic Change	J Earth Sci Clim Change	2.082
Geography & Natural Disasters	J Geogr Nat Disast	0.800
Hotel & Business Management	J Hotel Bus Manage	1.600
Information Technology & Software Engineering	J Inform Tech Soft Engg	2.789
Molecular Imaging & Dynamics	J Mol Imaging Dynam	2.091

Earth Science & Climatic Change	J Earth Sci Clim Change	2.082
Geography & Natural Disasters	J Geogr Nat Disast	0.800
Hotel & Business Management	J Hotel Bus Manage	1.600
Information Technology & Software Engineering	J Inform Tech Soft Engg	2.789
Molecular Imaging & Dynamics	J Mol Imaging Dynam	2.091
Petroleum & Environmental Engineering	J Pet Environ Biotechnol	2.839
Stock & Forex Trading	J Stock Forex Trad	0.300
Textile Science & Engineering	J Textile Sci Eng	0.667
Tourism & Hospitality	J Tourism Hospit	1.190
Telecommunications System & Management	J Telecommun Syst Manage	0.800
Physical Mathematics	J Phys Math	4.500
Nanomedicine & Nanotechnology	J Nanomed Nanotechnol	4.68
Arabian Journal of Business and Management Review	Arab J Bus Manage Rev	1.42
Research and Reviews: Journal of Engineering and Technology	Engineering and Technology	0.14
Journal of Material Sciences & Engineering	J Material Sci Eng	1.31
Journal of Mass Communication & Journalism	J Mass Communicat Journalism	0.62
Journal of Powder Metallurgy & Mining	J Powder Metall Min	0.71
Journal of Applied Mechanical Engineering	J Appl Mech Eng	1.65
Archives of Clinical Microbiology		0.35
Dentistry	Dentistry	1.22
Journal of Diabetes & Metabolism	J Diabetes Metab	1.77
Otolaryngology: Current Research	Otolaryngol (Sunnyvale)	0.22
Journal of Metabolic Syndrome	J Metabolic Synd	1.27
Journal of Primatology	J Primatol	0.53
Journal of Thyroid Disorders & Therapy	Thyroid Disorders Ther	0.43
Jounal of Novel Physiotherapies	J Nov Physiother	1.24
Journal of Stem Cell Research & Therapy	J Stem Cell Res Ther	2.78
Anatomy & Physiology: Current Research	Anat Physiol	1
Pancreatic Disorders & Therapy	Pancreat Disord Ther	0.54
Journal of Cancer Science & Therapy	J Cancer Sci Ther	4.203
Journal of Biomedical Sciences		0.2
Journal of Nutritional Disorders & Therapy	J Nutr Disord Ther	1.46
Medical & Surgical Urology	Med Surg Urol	0.3
Journal of Biochips & Tissue Chips	J Biochip Tissue Chip	1.7
Journal of Liver	J Liver	0.08
Journal of Family Medicine and Medical Research	Fam Med Med Sci Res	0.78
Gynecology & Obstetrics	Gynecol Obstet (Sunnyvale)	0.52
Journal of Integrative Oncology	J Integr Oncol	1.67
Journal of Neonatal Biology	J Neonatal Biol	0.55
Journal of Glycobiology	J Glycobiology	0.8
Journal of Blood & Lymph	J Blood Lymph	0.12
Journal of Arthritis	J Arthritis	1.87
Journal of Membrane Science & Technology	J Membra Sci Technol	1.18
Medicinal Chemistry	Med Chem (Los Angeles)	2.64
Journal of Physical Chemistry & Biophysics	J Phys Chem Biophys	0.75
Organic Chemistry: Current Research	Organic Chem Curr Res	1.94
Journal of Bioprocessing & Biotechniques	J Bioprocess Biotech	1.74
Journal of Environmental & Analytical Toxicology	J Environ Anal Toxicol	2.58
Journal of Chemical Engineering & Process Technology	J Chem Eng Process Technol	1.21
Journal of Computer Science & Systems Biology	J Comput Sci Syst Biol	1.62
Journal of Analytical & Bioanalytical Techniques	J Anal Bioanal Tech	2.16
Journal of Plant Biochemistry & Physiology	J Plant Biochem Physiol	2.28
Journal of Chromatography & Separation Techniques	J Chromatogr Sep Tech	1.78
Journal of Thermodynamics & Catalysis		0.91
Community Medicine & Health Education	J Community Med Health Educ	1.27
Epidemiology: Open Access	Epidemiology (Sunnyvale)	1.35
Obesity & Weight Loss Therapy	J Obes Weight Loss Ther	0.94
Pain & Relief	J Pain Relief	1.14
Palliative Care & Medicine	J Palliat Care Med	0.88
Steroids & Hormonal Science	J Steroids Horm Sci	0.65
Gastrointestinal & Digestive System	J Gastrointest Dig Syst	0.43
Hair: Therapy & Transplantation		0.6
Andrology	Andrology (Los Angel)	1.16
Endocrinology & Metabolic Syndrome	Endocrinol Metab Syndr	1.12
Internal Medicine		2.48
Sleep Disorders & Therapy	J Sleep Disord Ther	0.5
Nuclear Medicine & Radiation Therapy	J Nucl Med Radiat Ther	0.88
Alternative & Integrative Medicine	Altern Integr Med	1.11
Pulmonary & Respiratory Medicine	J Pulm Respir Med	1.01
Occupational Medicine Health Affairs	Occup Med Health Aff	0.85
Reproductive System & Sexual Disorders	Reprod Syst Sex Disord	1.25
Medical Diagnostic Methods		0.29
Blood Disorders & Transfusion	J Blood Disord Transfus	0.5
General Medicine	Gen Med (Los Angel)	0.86
Bioenergetics: Open Access	Bioenergetics	3.1
Chemotherapy: Open Access	Chemotherapy (Los Angel)	1.8
Clinical & Experimental Pathology	J Clin Exp Pathol	1.54
Carcinogenesis & Mutagenesis	J Carcinog Mutagen	1.9
Clinical Research & Bioethics	J Clinic Res Bioeth	0.95
Vaccines & Vaccination	J Vaccines Vaccin	1.8
Immunome Research	Immunome Res	7.1
Clinical & Experimental Ophthalmology	J Clin Exp Ophthalmol	1.11
Clinical & Experimental Dermotology Research	J Clin Exp Dermatol Res	0.5
Clinical & Experimental Cardiology	J Clin Exp Cardiolog	1.33
Clinical Microbiology: Open Access	Clin Microbiol	0.7
Anesthesia & Clinical research	J Anesth Clin Res	0.7
Mycobacterial Diseases	Mycobact Dis	0.9
Clinical Toxicology	J Clin Toxicol	1.39
Clinical Trials & Research	J Clin Trials	1.33
Antivirals & Antiretrovirals	J Antivir Antiretrovir	1.27
Fermentation Technology	Ferment Technol	3.44
Clinical & Cellular immunology	J Clin Cell Immunol	2.019
Allergy & Therapy	J Allergy Ther	0.762
Bacteriology & Parasitology	J Bacteriol Parasitol	2.025
Rheumatology: Current Research	Rheumatology (Sunnyvale)	1.522
Virology & Mycology	Virol Mycol	0.69
Clinics in Mother and Child Health	Clinics Mother Child Health	0.432
Womens Health Care	J Womens Health Care	0.79
Marine Science: Research & Development	J Marine Sci Res Dev	0.45
Plant Pathology & Microbiology	J Plant Pathol Microbiol	1.75
Geology & Geophysics	J Geol Geophys	0.91
FisheriesSciences	J Fisheries Sci	0.51
Fisheries and Aquaculture Journal	Fish Aquac J	0.69
Bioremediation & Biodegradation	J Bioremediat Biodegrad	2.1
Advances in Crop Science and Technology	Adv Crop Sci Tech	0.39
Journal of Remote Sensing & GIS	J Geophys Remote Sens	0.77
Biofertilizers & Biopesticides	J Biofertil Biopestic.	1.19
Hydrology: Current Research	Hydrol Current Res	1.12
Probiotics & Health	J Prob Health	0.69
Veterinary Science & Technology	J Veterinar Sci Technolo	2.5
Medicinal & Aromatic Plants	Med Aromat Plants	2.02
Forest Research	Forest Res	1.69
International Journal of Sensor Networks and Data Communications	Sensor Netw Data Commun	1.66
Innovative Energy Policies	Innov Energ Policies	0.88
Biodiversity & Endangered Species	J Biodivers Endanger Species	0.25
Biosafety	Biosafety	0.49
Agrotechnology	Agrotechnol	0.69
Journal of Traditional Medicine and Clinical Naturopathy	J Tradition Med Clin Naturopth	0.49
Nutrition & Food Sciences	J Nutr Food Sci	1.14
Entomology, Ornithology & Herpetology	Entomol Ornithol Herpetol	1.26

Impact Factor Calculation:

Impact Factor was established by dividing the number of articles published in 2012 and 2013 with the number of times they are cited in 2014 based on Google search and the Scholar Citation Index database. If 'X' is the total number of articles published in 2012 and 2013, and 'Y' is the number of times these articles were cited in indexed journals during 2014 than, impact factor = Y/X

16th World Nano Conference

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Supporting Journals

Supporting Journals

Journal of Nanomaterials & Molecular Nanotechnology

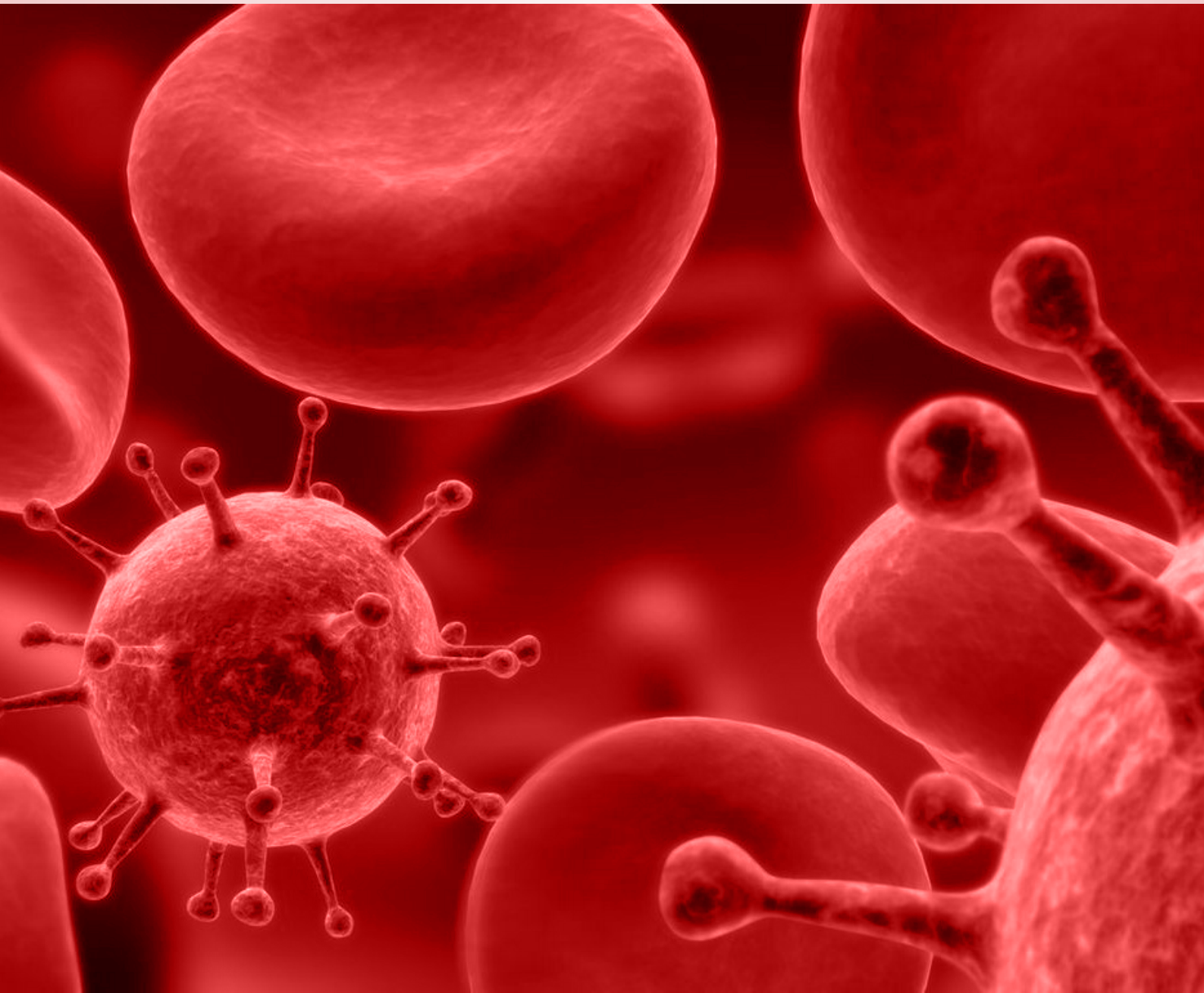
www.scitechnol.com/nanomaterials-molecular-nanotechnology.php

Journal of Nanomedicine & Nanotechnology

www.omicsonline.org/nanomedicine-nanotechnology.php

Journal of Nanomedicine & Biotherapeutic Discovery

www.omicsonline.org/nanomedicine-biotherapeutic-discovery.php



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2nd International Conference on
Food Chemistry and Nutrition
Jul 24-26, 2017 Vancouver, Canada

18th Global Summit on
Food & Beverages
Oct 02-04, 2017 Chicago, USA

8th International Conference on
Fisheries & Aquaculture
Oct 02-04, 2017 Toronto, Canada

9th Global Food Safety Conference
Dec 04-06, 2017 Atlanta, USA

20th Global Food Processing & Technology Summit
Dec 11-13 , 2017 Philadelphia, USA

3rd Global Summit on
Plant Science
Aug 07-09, 2017 Madrid, Spain

7th European Food Safety & Standards Conference
Sep 25-26, 2017 Vienna, Austria

10th International Conference on
Agriculture & Horticulture
Oct 02-04, 2017 London, UK

7th International Conference on
Aquaculture & Fisheries
Oct 19-21, 2017 Madrid, Spain

19th International Conference on
Food Processing & Technology
Oct 23-25, 2017 Paris, France

2nd International Conference on
Food Microbiology
Nov 09-11, 2017 Madrid, Spain

9th Global Summit on
Agriculture & Horticulture
Aug 10-11, 2017 Beijing, China

World Aqua Congress
Oct 23-24, 2017 Dubai, UAE

5th International Food Safety, Quality & Policy Conference
Nov 27-28, 2017 Dubai, UAE

ALTERNATIVE HEALTHCARE

5th International Conference and Expo on
Acupuncture and Oriental Medicine
Jul 20-21, 2017 Chicago, USA

13th International Conference on
Connective Tissue Diseases, Systemic Conditions, Treatment & Therapies
Sep 27-28, 2017 Chicago, USA

8th International Conference on
Traditional & Alternative Medicine
Sep 04-06, 2017 Paris, France

Annual Meeting on
Naturopathic Physicians & Acupuncturists
Jul 24-26, 2017 Melbourne, Australia

8th International Conference and Exhibition on
Natural & Alternative Medicine
Sep 25-27, 2017 Dubai, UAE

23rd International Conference on
Herbal and Alternative Remedies for Diabetes and Endocrine Disorders
Nov 02-04, 2017 Thailand, Bangkok

BIOCHEMISTRY

2nd International Conference on
Nucleic Acids, Molecular biology & Biologics Conference
Aug 31-Sep 01, 2017 Philadelphia, USA

10th International Conference and Exhibition on
Metabolomics & Systems Biology
Oct 16-17, 2017 Baltimore, USA

3rd International Conference on
Genetic and Protein Engineering
Nov 08-09, 2017 Las Vegas, USA

9th International Conference on
Structural Biology
Sep 18-19, 2017 Zurich, Switzerland

9th International Conference and Expo on
Proteomics
Oct 23-25, 2017 Paris, France

9th International Conference on
Bioinformatics
Oct 23-24, 2017 Paris, France

3rd International Conference on
Lipid Science & Technology
Dec 11-12, 2017 Madrid, Spain

2nd International Conference on
Biochemistry
Aug 07-08, 2017 Beijing, China

3rd International Conference on
Transcriptomics
Oct 30- Nov 01, 2017 Thailand, Bangkok

CARDIOLOGY

19th Annual Cardiology Conference
Aug 31-Sep 01, 2017 Philadelphia, USA

21st International Conference on
Clinical & Experimental Cardiology
Nov 06-07, 2017 Las Vegas, USA

2nd International Conference on
Hypertension & Healthcare
Sep 11-13, 2017 Amsterdam, Netherlands

2nd International Conference on
Echocardiography
Sep 11-12, 2017 Amsterdam, Netherlands

20th European Cardiology Conference
Oct 16-18, 2017 Budapest, Hungery

22nd World Cardiology Conference
Dec 11-12, 2017 Madrid, Spain

16th World Cardiology Congress
December 08-10, 2017 Dubai, UAE

3rd Global Summit on
Heart Diseases
Nov 02-04, 2017 Thailand, Bangkok

CHEMICAL ENGINEERING

International Conference on
Renewable Energy and Resources
Jul 24-25, 2017 Vancouver, Canada

7th International Congress and Expo on
Biofuels & Bioenergy
Oct 02-04, 2017 Toronto, Canada

3rd International Conference on
Chemical Engineering
Oct 02-04, 2017 Chicago, USA

7th International Conference and Exhibition on
Biopolymers and Bioplastics
Oct 19-21, 2017 San Francisco, USA

7th World Congress on
Petrochemistry and Chemical Engineering
Nov13-15, 2017 Atlanta, USA

2nd World Biodiesel Congress & Expo
Dec 04-05, 2017 Atlanta, USA

6th International Congress and Expo on
Biofuels, Bioenergy & Bioeconomy
Dec 04-06, 2017 Sao Paulo, Brazil

3rd International Conference and Expo on
Oil and Gas
Jul 13-14, 2017 Berlin, Germany

5th International Conference on
Sustainable Bioplastics
Jul 20-21, 2017 Munich, Germany

6th World Congress on
Biofuels and Bioenergy
Sep 05-06, 2017 London, UK

6th World Congress on
Biopolymers
Sep 07-09, 2017 Paris, France

2nd Euro Global Summit and Expo on
Biomass
Sep 21-22, 2017 Madrid, Spain

International Conference on
Renewable Energy and Resources
Oct 05-07, 2017 Kuala Lumpur, Malaysia

CHEMISTRY

3rd International Conference on
Organic & Inorganic Chemsitry
Jul 17-19, 2017 Chicago, USA

3rd World Chemistry Conference
Sep 11-12, 2017 Dallas, USA

5th International Conference on
Current Trends in Mass Spectrometry
Sep 25-27, 2017 Atlanta, USA

9th International Conference and Exhibition on
Analytical & Bioanalytical Techniques
Sep 28-29, 2017 Atlanta, USA

2nd International Conference on
Clinical Chemistry and Laboratory Medicine
Sep 28-29, 2017 Atlanta, USA

4th International Conference on
Past and Present Research Systems of Green Chemistry
Oct 16-18, 2017 Atlanta, USA

7th International Conference on
Medicinal Chemistry & Computer Aided Drug Designing
Nov 02-04, 2017 San Antonio, USA

2nd International Conference on
Nuclear Chemistry
Nov 06-07, 2017 Las Vegas, USA

2nd International Conference and Exhibition on
Polymer Chemistry
Nov 06-08, 2017 Las Vegas, USA

International Conference on
Electrochemistry
Jul 10-11, 2017 Berlin, Germany

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3rd International Conference and Exhibition on
Advances in Chromatography & HPLC Techniques
Jul 13-14, 2017 Berlin, Germany

2nd International Conference and Exhibition on
Materials Chemistry
Jul 13-14, 2017 Berlin, Germany

4th World Congress on
Chromatography
Aug 07-09, 2017 Madrid, Spain

5th International Conference and Exhibition on
Pain Research & Management
Sep 04-05, 2017 London, UK

5th Global Chemistry Congress
Sep 04-06, 2017 London, UK

International Conference on
Physical and Theoretical Chemistry
Sep 18-19, 2017 Dublin, Ireland

2nd International Conference on
Pharmaceutical Chemistry
Oct 02-04, 2017 Barcelona, Spain

5th International Conference and Expo on
Separation Techniques
Oct 23-25, 2017 Paris, France

10th Annual Chemistry Congress
Oct 18-19, 2017 Osaka, Japan

6th Global Congress on
Mass Spectrometry
Oct 18-19, 2017 Osaka, Japan

7th Global Mass Spectrometry Congress
Dec 14-16, 2017 Dubai, UAE

COMPUTER SCIENCE

5th International Conference on
Big Data Analysis
Sep 07-08, 2017 Toronto, Canada

DENTISTRY

17th Global Dentists and Pediatric Dentistry Annual meeting
Jul 17-18, 2017 Munich, Germany

24th World Congress on
Dentistry and Oral Health
Sep 01-02, 2017 London, UK

24th Euro Congress on
Dental & Oral Health
Oct 19-20, 2017 Budapest, Hungery

3rd International Conference on
Sports Medicine and Fitness
Sep 21-23, 2017 Barcelona, Spain

International Conference on
Dentistry & Dental Marketing
Oct 05-06, 2017 Las Vegas, USA

29th Annual World Congress on
Dental Medicine & Dentistry
Oct 16-18, 2017 NewYork, USA

37th Global Summit on
Dental Surgeons & Dental Materials
Nov 02-04, 2017 San Antonio, USA

38th Annual Congress on
World Dentistry
Nov 06-08, 2017 San Antonio, USA

26th American Dental Congress
Dec 04-06, 2017 Atlanta, USA

39th World Dental Congress Summit
Dec 04-06, 2017 Sao Paulo, Brazil

28th Asia Pacific Dental and Oral Health Congress
Jul 10-12, 2017 Malyasia, Kuala Lumpur

30th Global Experts Meet on
Advanced Dentistry and Oral Health
Sep 21-22, 2017 Macau, Hong Kong

31st Annual Conference on
Dental Practice Management and Marketing
Sep 21-22, 2017 Macau, Hong Kong

37th Asia Pacific Dental and Oral Care Congress
Nov 20-22, 2017 Australia, Melbourne

9th Clinical Dermatology Congress
Oct 16-18, 2017 NewYork, USA

2nd International Conference on
Psoriasis and Skin Specialists Meeting
Sep 20- 21, 2017 Philadelphia, USA

12th Global Dermatologists Annual Meeting
Sep 01-02, 2017 London, UK

13th International Conference and Exhibition on
Cosmetic Dermatology and Hair care
Oct 26-27, 2017 Paris, France

23rd Asia Pacific Dermatology Conference
Oct 26-28, 2017 Osaka, Japan

International Conference on
Pigmentary Disorders
Sep 11-12, 2017 Dubai, UAE

17th World Dermatology Conference
Sep 11-12, 2017 Dubai, UAE

DIABETES AND ENDOCRINOLOGY

10th International Conference on
Clinical diabetes, Diabetes care & Nutrition
Jul 20-21, 2017 Chicago, USA

9th Annual Congress on
Endocrine Disorders and Therapies
Sep 11-12, 2017 Dallas, USA

International Conference on
Diabetes
Sep 20-22, 2017 Denever, USA

International Conference on
Diabetes, Metabolism & Obesity
Nov15-17, 2017 Las Vegas, USA

International Conference on
Diabetes and Endocrinology
Dec 06-08, 2017 Atlanta, USA

18th European Diabetes Congress
Jul 17-18, 2017 Lisbon, Portugal

2nd International Conference on
Metabolic Syndrome
Aug 10-11, 2017 London, UK

21th International Conference on
Diabetes
Oct 05-06, 2017 London, UK

19th Asia Pacific Diabetes Conference
Jul 20-22, 2017 Melbourne, Australia

International Conference on
Endocrinology and Diabetes Summit
Sep 13-14, 2017 Singapore

2nd International Conference on
Herbal and Alternative Remedies for Diabetes and Endocrine Disorders
Nov 02-04, 2017 Thailand, Bangkok

25th Global Diabetes and Medicare Expo
Dec 11-12, 2017 Dubai, UAE

ENVIRONMENTAL SCIENCES

International Conference on
Ecology and Ecosystems
Sep 18-20, 2017 Toronto, Canada

3rd Annual Congress on
Pollution and Global Warming
Oct 16-18, 2017 Atlanta, USA

4th International Conference on
GreenEnergy & Expo
Nov 06-08, 2017 Las Vegas, USA

5th International Conference on
Recycling: Reduce, Reuse and Recycle
Nov 06-08, 2017 Las Vegas, USA

4th World Congress and Expo on
Recycling
July 27-29, 2017 Madrid, Spain

3rd International Conference on
Green Energy and Expo
Sep 28-29, 2017 Berlin, Germany

2nd International Conference on
Pollution Control and Sustainable Environment
Oct 10-11, 2017 London, UK

4th World Conference on
Climate Change
Oct 19-21, 2017 Madrid, Spain

2nd International Conference on
Coastal Zones
Jul 10-11, 2017 Jakarta, Indonesia

Annual Congress on
Environmental Pollution and Sustainable energy
Jul 20-22, 2017 Melbourne, Australia

7th World Convention on
Recycling and Waste Management
Aug 10-12, 2017 Beijing, China

2nd World Congress on
Climate Change and Global Warming
Oct 16-17, 2017 Dubai, UAE

EEE & ENGINEERING

3rd International Conference on
Data Structures and Data Mining
Aug 17-18, 2017 Toronto, Canada

International Conference on
Agricultural Engineering
Sep 11-12, 2017 San Antonio, USA

8th International Conference and Exhibition on
Biosensors and Bioelectronics Biosensors & Bioelectronics
Sep 27-28, 2017 Chicago, USA

2nd World Summit on
Bioengineering
Sep 27-28, 2017 Chicago, USA

5th International Conference and Exhibition on
Mechanical & Aerospace Engineering
Oct 02-04, 2017 Las Vegas, USA

4th World Congress and Exhibition on
Construction and Steel Structure
Oct 16-18, 2017 Atlanta, USA

7th International Conference on
Nuclear Engineering
Oct 16-18, 2017 Atlanta, USA

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International Conference on
Applied Energy
Oct 23-24, 2017 Orlando USA

6th International Conference on
Biostatistics & Bioinformatics
Nov13-14, 2017 Atlanta, USA

International conference on
3D Printing and Technology
Jul 05-06, 2017 Frankfurt, Germany

7th Euro Biosensors and Bioelectronics Conference
Jul 10-12, 2017 Berlin, Germany

3rd International Conference and Business Expo on
Wireless & Telecommunication
Jul 20-21, 2017 Munich, Germany

3rd Global Summit and Expo on
Multimedia & Artificial Intelligence
Jul 20-21, 2017 Lisbon, Portugal

2nd International Conference on
Power and Energy Engineering
Jul 20-21, 2017 Munich, Germany

2nd International Conference on
Battery and Fuel Cell Technology
Jul 27-28, 2017 Madrid, Spain

2nd International Conference on
Design and Production Engineering
Aug 21-22, 2017 Birmingham, UK

4th International Conference on
BigData Analysis and Data Mining
Sep 07-08, 2017 Paris, France

4th International conference and Expo on
Computer Graphics & Animation
Sep 25-26, 2017 Berlin, Germany

3rd International Conference and Exhibition on
Automobile Engineering
Sep 28-29, 2017 Berlin, Germany

2nd Global Summit on
Fluid Dynamics & Aerodynamics
Oct 19-20, 2017 Madrid, Spain

International Conference on
Mechatronics, Automation and Intelligent Materials
Oct 23-25, 2017 Paris, France

International Conference on
Steel Structures
Sep 11-12, 2017 Singapore

International Conference on
Smart Grid Technologies
Sep 11-12, 2017 Singapore

Geotechnical and Water Resource Engineering Summit
Sep 18-19, 2017 Macau, Hong Kong

3rd World Congress on
Robotics and Artificial Intelligence
Oct 23-24, 2017 Osaka, Japan

GASTROENTEROLOGY

International Conference on
Pancreatic Disorders and Treatment
Sep 13-14, 2017 Dallas, USA

2nd International Conference on
Hepatology & Gastroenterology
Nov 13-14, 2017 Las Vegas, USA

5th World Congress on
Hepatitis & Liver Diseases
Aug 10-12, 2017 London, UK

12th Euro-Global Gastroenterology Conference
Sep 11-12, 2017 Paris, France

2nd International Conference on
Digestive Diseases
Oct 16-17, 2017 London, UK

10th International Conference on
Gastroenterology
Oct 30- Nov 01, 2017 Bangkok, Thailand

GENETICS & MOLECULAR BIOLOGY

6th International Conference on
Tissue Science & Regenerative Medicine
Aug 23-24 , 2017 San Francisco, USA

3rd International Conference & Exhibition on
Tissue Preservation and Biobanking
Aug 23-24 , 2017 San Francisco, USA

3rd Annual Genomics and Toxicogenomics Conference
Sep 27-28, 2017 Chicago, USA

Annual Summit on
Cell Signaling and Cancer Therapy
Sep 27-28, 2017 Chicago, USA

Annual Summit on
Cell Therapy
Sep 27-28, 2017 Chicago, USA

13th World Biotechnology Congress
Oct 19-20, 2017 NewYork, USA

2nd World Biotechnology Congress
Dec 04-05, 2017 Sao Paulo, Brazil

3rd International Conference on
Synthetic Biology
Jul 20-21, 2017 Munich, Germany

13th International Conference on
Human Genetics
Sep 14-15, 2017 Edinburgh, Scotland

9th Annual Conference on
Stem Cell and Regenerative Medicine
Sep 25-26, 2017 Berlin, Germany

17th EuroBiotechnology Congress
Sep 25-27, 2017 Berlin, Germany

7th International Conference on
Tissue Engineering and Regenerative Medicine
Oct 02-04, 2017 Barcelona, Spain

5th International Conference on
Plant Genomics
Jul 03-05, 2017 Thailand, Bangkok

World Congress on
Molecular Genetics and Gene Therapy
Jul 03-05, 2017 Thailand, Bangkok

World Congress on
Nano Science and Nano Technology
Jul 10-11, 2017 Jakarta, Indonesia

14th Asia-Pacific Biotech Congress
Jul 20-22, 2017 Melbourne, Australia

3rd Annual Congress and Expo on
Bioscience
Aug 10-12, 2017 Beijing, China

8th International Conference on
Tissue Science and Regenarative Medicine
Sep 11-12, 2017 Singapore

10th International Convention on
Stem Cell and Biobanking
Oct 23-24, 2017 Osaka, Japan

GEOLOGY & EARTH SCIENCE

3rd World Congress on
GIS and Remote Sensing
Sept 20-21, 2017 Charlotte, USA

2nd International Convention on
Geophysics and Geo technics
Nov 08-09, 2017 Las Vegas, USA

2nd International Convention on
Geosciences and Remote Sensing
Nov 08-09, 2017 Las Vegas, USA

13th International Conference on
GIS and Remote Sensing
Jul 20-21, 2017 Munich, Germany

Annual Congress on
Soil Sciences
Dec 04-05, 2017 Madrid, Spain

6th International Conference on
Earth Science and Climate change
Sep 18-19, 2017 Macau, Hong Kong

5th International Conference on
Oceanography and Marine Biology
Oct 16-17, 2017 Seoul, South Korea

HEALTHCARE MANAGEMENT

3rd International Conference on
Wound Care, Tissue Repair & Regenerative Medicine
Sep 11-12, 2017 Dallas, USA

13th International Conference on
Health & Medical Sociology
Sep 25-26, 2017 Atlanta, USA

10th World Congress on
Healthcare & Technologies
Jul 17-18, 2017 Lisbon, Portugal

5th International Conference on
Medical Informatics & Telehealth
Aug 29-30, 2017 Prague, Czech Republic

2nd International Conference on
Environmental Health & Safety
Sep 07-08, 2017 Paris, France

2nd International Conference on
General Practice & General Medicine
Sep 18-20, 2017 Zurich, Switzerland

6th International Conference on
Epidemiology & Public Health
Oct 23-25, 2017 Paris, France

2nd International Conference on
Health & Hospital Management
Nov 06-07, 2017 Vienna, Austria

International Conference on
Medical Education
Nov 06-08, 2017 Vienna, Austria

12th World Congress on
Healthcare and Medical Tourism
Oct 16-17, 2017 Dubai, UAE

IMMUNOLOGY

3rd Annual Global Conference on
Parasitology
Jul 31-Aug 01, 2017 Chicago, USA

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2nd International Conference on
Tumor & Cancer Immunology and Immunotherapy
Jul 17-19, 2017 Chicago, USA

3rd Antibodies and Bio Therapeutics Congress
Nov 08-09, 2017 Las Vegas, USA

5th International conference on
HIV/AIDS, STDS & STIS
Nov 13-14, 2017 Las Vegas, USA

9th World Congress and Expo on
Immunology
Nov 02-03, 2017 Atlanta, USA

3rd International Conference on
Immunity, Inflammation and Immunotherapies
Nov 02-03, 2017 Atlanta, USA

11th International Conference on
Allergy, Asthma & Clinical Immunology
Aug 16-17, 2017 Edinburgh, Scotland

4th International Conference on
Parasitology
Sep 01-02, 2017 Prague, Czech Republic

2nd International Conference on
Autoimmunity
Nov 09-10, 2017 Madrid, Spain

International Conference on
Cancer & Tumor Immunology
Jul 03-05, 2017 Thailand, Bangkok

9th Annual Meeting on
Immunology and Immunologist
Jul 03-05, 2017 Kuala Lumpur, Malaysia

Annual Summit on
HIV/AIDS, STDs & STIs
Aug 07-09, 2017 Beijing, China

World Immunology Congress
Dec 14-15, 2017 Dubai, UAE

INFECTIOUS DISEASES

3rd International Conference on
Influenza and Zoonotic Diseases
Aug 21-22, 2017 Birmingham, UK

9th Euro-Global Conference on
Infectious Diseases
Sep 07-09, 2017 Paris, France

13th World Congress on
Infection Prevention and Control
Oct 26-27, 2017 Milano, Italy

3rd International Conference on
Retroviruses, Novel Drugs and Therapies
Jul 27-28, 2017 Vancouver, Canada

3rd Annual Congress on
Infectious Diseases
Aug 21-23 2017 San Francisco, USA

Annual Congress on
Medical Laboratory Congress & Expo
Aug 21-22, 2017 San Francisco, USA

2nd International Conference on
Infection Control
Sep 25-26, 2017 Chicago, USA

3rd Annual Congress on
Rare Diseases and Orphan Drugs
Oct 30-Nov 01, 2017 San Antonio, USA

3rd International conference on
Flu & Emerging Infectious Diseases
Nov 06-07, 2017 Las Vegas, USA

6th Annual Bacteriology and Parasitology Meeting
Sep 13-14, 2017 Singapore

7th Asia Pacific STD and Infectious Diseases Congress
Oct 23-25, 2017 Osaka, Japan

MATERIALS SCIENCE

International Conference on
Graphene and Semiconductors
Jul 17-18, 2017 Chicago, USA

International Conference on
Diamond and Carbon Materials
Jul 17-18, 2017 Chicago, USA

10th International Conference on
Emerging Materials & Nanotechnology
Jul 27-29, 2017 Vancouver, Canada

3rd International Conference on
Polymer Science and Engineering
Oct 02-04, 2017 Chicago, USA

2nd International Conference on
Applied Crystallography
Oct 16-18, 2017 Chicago, USA

13th International Conference and Exhibition on
Materials Science and Engineering
Nov13-15, 2017 Las Vegas, USA

14th International Conference on
Functional Energy Materials
Dec 06-07, 2017 Atlanta, USA

11th International Conference on
Advanced Materials and Processing
Sep 06-07 2017 Edinburgh, Scotland

12th Annual Congress on
Materials Science and Nanotechnology
Sep 25-26, 2017 Dubai, UAE

International Conference on
Advanced Materials and Nanotechnology
Oct 26-28, 2017 Osaka, Japan

MICROBIOLOGY

2nd International conference on
Environmental & Soil Microbiology
Sep 18-20, 2017 Toronto, Canada

7th International Conference on
Clinical Microbiology
Sep 25-26, 2017 Chicago, USA

International Conference on
Water Microbiology & Novel Technologies
Aug 28-30, 2017 Philadelphia, USA

2nd International conference on
Human Papillomavirus
Nov13-14, 2017 Las Vegas, USA

International Conference and Expo on
Medical Virology
Aug 31-Sep 01, 2017 Philadelphia, USA

2nd International Congress on
Mycology
Sep 25-26, 2017 Chicago, USA

International Conference on
Infectious Diseases & Diagnostic Microbiology
Sep 13-14, 2017 Dallas, USA

3rd World Congress on
Beneficial Microbes: Food, Pharma, Aqua & Beverages Industry
Sep 18-20, 2017 Houston, USA

World Summit on
Microbial & Biochemical Technologies
Sep 18-20, 2017 Houston, USA

Global Veterinary Microbiology Summit & Expo
Oct 02-04, 2017 Las Vegas, USA

11th World Summit on
Medical Microbiology
Oct 02-04, 2017 Las Vegas, USA

World Summit on
Nosocomial and Healthcare Associated Infections
Oct 02-04, 2017 Las Vegas, USA

6th Annual Conference on
Microbiology
Oct 16-17, 2017 Baltimore, USA

11th World Congress on
Virology
Oct 16-17, 2017 Baltimore, USA

World Yeast Congress
Dec 06-07, 2017 Sao Paulo, Brazil

International Conference on
Microbial Pathogenesis & Host Response Mechanism
Aug 24-25, 2017 Toronto, Canada

World Host-Microbial Interactions Congress
Jul 17-18, 2017 Munich, Germany

6th International Conference on
Microbial Physiology and Genomics
Aug 31-Sep 01, 2017 Brussels, Belgium

46th World Congress on Microbiology
Sep 18-19, 2017 Dublin, Ireland

6th Clinical Microbiology Conference
Oct 26-27, 2017 Paris, France

4th World Congress and Expo on
Applied Microbiology
Nov 09-11, 2017 Madrid, Spain

International Conference on
Medical and Clinical Microbiology
Jul 03-05, 2017 Thailand, Bangkok

2nd International Conference and Summit on
Industrial and Pharmaceutical Microbiology
Oct 23-25, 2017 Osaka, Japan

10th International Congress on
Clinical Virology
Dec 04-05, 2017 Dubai, UAE

Annual Congress on
Microbes and Infection
Dec 04-05, 2017 Dubai, UAE

NANOTECHNOLOGY

2nd world congres and expo on
Graphene 2D Materials
Aug 15-16, 2017 Edinburgh, Scotland

19th Nano Congress for Next Generation
Aug 31-Sep1, 2017 Brussels, Belgium

22th International Conference and Expo on
Nanoscience and Molecular Nanotechnology
Nov 13-14, 2017 Vienna, Austria

International conference on
Nanobiotechnology
Jul 31-Aug 01, 2017 Chicago, USA

World Congress on
Regulations of Nanotechnology
Jul 31-Aug 01, 2017 Chicago, USA

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International Conference on
Nano Science and Technology
Sep 18-19, 2017 Orlando, USA

19th International Conference on
Nanotek and Expo
Nov13-15, 2017 Atlanta, USA

17th Nanotechnology products and Summit
Nov13-15, 2017 Atlanta, USA

World Congress on
NanoScience and NanoTechnology
July 10-11, 2017 Jakarta Indonesia

15th World Medical Nanotechnology Congress & Expo
Oct 18-19, 2017 Osaka, Japan

3rd Biomedical Engineering and Expo
Nov 07-08, 2017 Barcelona, Spain

NEPHROLOGY

15th Annual Congress on
Nephrology & Therapeutics
Aug 28-30, 2017 Philadelphia, USA

2nd Annual Kidney Congress
Aug 28-30, 2017 Philadelphia, USA

16th European Nephrology Conference
Oct 02-04, 2017 Barcelona, Spain

13th Annual Conference on
Nephrology & Urology
Jul 06-07, 2017 Kuala Lumpur, Malaysia

17th World Nephrology Conference
Oct 18-19, 2017 Dubai, UAE

NEUROSCIENCE

14th World Congress on
Neurology and Neurological disorders
Jul 17-19, 2017 Chicago, USA

3rd International Conference on
Parkinson's Disease & Movement Disorders
Sep 25-26, 2017 Chicago, USA

3rd International Conference on
Spinal Surgery
Oct 16-17, 2017 Chicago, USA

8th International Conference and Exhibition on
Addiction Research & Therapy
Nov 13-15, 2017 Las Vegas, USA

2nd International Conference on
Spine and Spinal Disorders
Jul 24-26, 2017 Madrid, Spain

3rd International Conference on
Epilepsy & Treatment
Aug 31-Sep 01, 2017 Brussels, Belgium

15th European Neurology Congress
Aug 29-31, 2017 London, UK

7th World Congress on
Addictive Disorders and Addiction Therapy
Aug 29-31, 2017 Prague, Czech Republic

3rd International Conference on
Central Nervous System Disorders
Sep 25-27, 2017 Vienna, Austria

16th International Conference on
Neuro Cognitive Disorders
Oct 10-11, 2017 London, UK

9th International Conference on
Alzheimer's Disease & Dementia
Oct 16-18, 2017 Madrid, Spain

6th International Conference on
Brain Disorders and Therapeutics
Nov 06-08, 2017 Madrid, Spain

18th Global Neurologists Annual Meeting on
Neurology and Neuro Surgery
Nov 16-17, 2017 Vienna, Austria

7th International Conference on
Addictive Disorders and Alcoholism
Jul 03-04, 2017 Kuala Lumpur, Malaysia

15th International Conference on
Neuroscience
Oct 16-17, 2017 Osaka, Japan

13th Global Neurologists Annual Meeting on
Neurology and Neuro Surgery
Nov 27-28, 2017 Dubai, UAE

NURSING

23rd Cardiovascular Nursing & Nurse Practitioners Meeting
Jul 10-11, 2017 Chicago, USA

4th Annual Congress & Medicare Expo on
Primary Healthcare
Aug 21-22 , 2017 San Francisco, USA

13th International Conference on
Midwifery and Women's Health
Aug 28-30, 2017 Philadelphia, USA

30th Oncology Nursing & Nurse Practitioners Conference
Aug 28-30, 2017 Philadelphia, USA

32nd International Conference on
Family Nursing and Healthcare
Sep 11-13, 2017 San Antonio, USA

34th Clinical Nursing & Nurse Education Conference
Sep 20-21, 2017 charlotte, USA

3rd International Conference on
Reproductive Health
Oct 05-06, 2017 Chicago, USA

11th Global Healthcare and Fitness Summit
Oct 16-18, 2017 San Francisco, USA

46th Global Nursing and Healthcare Conference
Dec 06-07, 2017 Sao Paulo, Brazil

35th Global Nursing Care and Education Conference
Sep 25-27, 2017 Atlanta, USA

40th International Conference on
Nursing & Healthcare
Oct 16-18, 2017 NewYork, USA

23rd World Nursing and Healthcare Conference
Jul 10-12, 2017 Berlin, Germany

25th Cancer Nursing & Nurse Practitioners Conference
Jul 17-18, 2017 Lisbon, Portugal

29th World Congress on
Advanced Nursing Practicwe
Aug 14-16, 2017 Edinburgh, Scotland

37th World Nursing Education Conference
Sept 01-03, 2017 Prague, Czech Republic

28th International Conference on
Pediatric Nursing and Healthcare
Sep 04-05, 2017 Edinburgh, Scotland

35th Critical Care nursing & Nurse Practitioners Conference
Sep 28-29, 2017 Berlin, Germany

4th International Conference on
Gynecology & Obstetrics
Oct 02-04, 2017 Barcelona, Spain

13th International Conference on
Midwifery and Women's Health
Oct 02-04, 2017 London, UK

41st Euro Nursing & Medicare Summit
Oct 26-28, 2017 Paris, France

9th Asia-Pacific Global Summit & Expo on
Healthcare
Jul 03-05, 2017 Kuala Lumpur, Malaysia

4th World Congress on
Midwifery and Women's Health
Jul 20-22, 2017 Melbourne, Australia

World Congress on
Nursing Care
Jul 24-26, 2017 Melbourne, Australia

International Conference on
Oncology Nursing and Cancer Care
Sep 13-14, 2017 Singapore

23rd World Nurse Practitioners Conference
Sep 28-29 2017 Dubai, UAE

27th Surgical Nursing & Nurse Education Conference
Oct 16-17, 2017 Dubai, UAE

Asia-Pacific Nursing and Medicare Summit
Oct 05-07, 2017 Kuala Lumpur, Malaysia

World Congress on
Nursing Pharmacology and Nursing Education
Nov 20-21, 2017 Melbourne, Australia

NUTRITION & OBESITY

16th International conference and Exhibition on
Obesity & Weight Management
Nov16-17, 2017 Atlanta, USA

12th International Conference on
Clinical Diabetes, Diabetes care & Nutrition
Jul 20-21, 2017 Chicago, USA

12th World Congress on
Obesity
Aug 24-25, 2017 Toronto, Canada

17th World Fitness Expo
Nov 16-17, 2017 Atlanta, USA

13th International Congress on
Advances in Natural Medicines, Nutraceuticals & Neurocognition
Jul 27-28, 2017 Madrid, Spain

14th International Conference on
Clinical Nutrition
Jul 27-29, 2017 Madrid, Spain

15th World Congress on
Nutrition and Food Chemistry
Sep 18-20, 2017 Zurich, Switzerland

13th Euro Obesity and Endocrinology Congress
Sep 21-23, 2017 Madrid, Spain

6th International Conference and Exhibition on
Probiotics, Functional and Baby Foods
Oct 02-03, 2017 London, UK

12th World congress on
Obesity and Endocrinology
Jul 17-19, 2017 Melbourne, Australia

15th Global Obesity Meeting
Oct 23-24, 2017 Dubai, UAE

18th Global Dieticians & Nutritionists Annual Meeting
Oct 02-03, 2017 Kuala Lumpur, Malaysia

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16th Obesity Medicine Conference
Oct 30- Nov 01, 2017 Thailand, Bangkok

ONCOLOGY & CANCER

3rd Annual Conference on
Gynecologic Oncology
Jul 20-21, 2017 Chicago, USA

World Congress on
Preventive Oncology
Jul 20-21, 2017 Chicago, USA

25th World Congress on
Cancer Therapy
Oct 18-20, 2017 Baltimore, USA

10th Annual World Congress on
Biomarkers & Clinical Research
Oct 18-20, 2017 Chicago, USA

5th International Conference on
Medical Imaging and Radiology
Oct 19-20, 2017 NewYork, USA

15th World Oncologists Annual Conference
Oct 19-20, 2017 NewYork, USA

World Medical and Clinical Oncology Congress
Nov13-15 , 2017 Las Vegas, USA

5th World Congress on
Breast Cancer
Oct 16-18, 2017 San Francisco, USA

9th International Conference on
Hematology and Hematological Oncology
Nov 08-09, 2017, Las Vegas, USA

19th Euro Congress on
Cancer Science and Therapy
Jul 17-19, 2017 Lisbon, Portugal

7th International Conference on
Nuclear Medicine & Radiation Oncology
Jul 27-28, 2017 Madrid, Spain

20th International Conference on
Radiation Oncology & Anti- Cancer Therapy
Aug 28-29, 2017 Brussels, Belgium

9th International Conference and Expo on
Molecular & Cancer Biomarkers
Aug 24-25, 2017 Birmingham, UK

2nd International Congress on
Contemporary Issues in Women Cancers and Gynecologic Oncology
Aug 28-29, 2017 London, UK

2nd International conference on
Medical Imaging and Radiology
Sep 11-12, 2017 London, UK

11th International Conference on
Hematologic Oncology
Oct 05-06, 2017 London, UK

25th World Cancer Conference
Oct 19-21, 2017 Madrid, Spain

International Conference on
Epigenetics
Nov 06-07, 2017 Madrid, Spain

9th International Conference on
Biomarkers
Oct 16-17, 2017 Osaka, Japan

14th Asia Pacific Oncologists Annual Meeting
Oct 26-28, 2017 Osaka, Japan

World Cancer Convention
Nov 27-28, 2017 Dubai, UAE

International Conference on
Cancer Diagnostics
Nov 27-28, 2017 Dubai, UAE

International Conference on
Epigenetic Research
Oct 26-28, 2017 Osaka, Japan

OPHTHALMOLOGY

Global Congress & Expo on
Optometry and Vision Science
Jul 17-18, 2017 Chicago, USA

20th World Ophthalmology Summit
Dec 04-05, 2017 Sao Paulo, Brazil

2nd International conference and Expo on
Cataract and Refractive Surgery
Jul 10-11, 2017 Berlin, Germany

15th Global Meeting and Expo on
Vision Science
Aug 10-11, 2017 London, UK

5th International conference and Expo on
Optometry and Vision Science
Sep 11-12, 2017 Paris, France

16th International Conference on
Clinical & Experimental Ophthalmology
Sep 18-20, 2017 Zurich, Switzerland

18th European Ophthalmology Congress
Dec 07-09, 2017 Madrid, Spain

3rd International Conference on
Optometry and Vision Science
August 7-9, 2017 Beijing, China

10th International Conference on
Clinical and Surgical Ophthalmology
Aug 07-09, 2017 Beijing, China

2nd World Ophthalmology Conference
Oct 23-25, 2017 Osaka, Japan

17th Global Ophthalmology and Glaucoma Conference
Nov 27-28, 2017 Dubai ,UAE

PALLIATIVE CARE

8th International Conference on
Geriatric Medicine & Gerontological Nursing
Oct 30-Nov 01, 2017 San Antonio, USA

7th International Conference on
Geriatrics & Gerontological Nursing
Sep 04-05, 2017 Edinburgh, Scotland

PATHOLOGY

2nd International Conference on
Internal Medicine
Sep 13-14, 2017 Dallas, USA

7th International Conference on
Predictive, Preventive and Personalized Medicine & Molecular Diagnostics
Oct 5-6, 2017 Chicago, USA

6th Experts Meeting on
Medical Case Reports
Oct 16-18, 2017 San Francisco, USA

2nd International conference on
Digital Pathology
Nov 02-03, 2017 San Antonio, USA

4th World Congress on
Breast Pathology
Aug 24-25, 2017 Toronto, Canada

14th European Pathology Congress
Aug 02-03, 2017 Milan, Italy

6th European Conference on
Predictive , Preventive and Personalized Medicine & Molecular Diagnostics
Aug 24-25, 2017 Birmingham, UK

5th European Conference on
Clinical and Medical Case Reports
Sep 07-08, 2017 Paris, France

PEDIATRICS

2nd World Congress Pediatric Oncology & Pediatric Medicine
Oct 05-06, 2017 Las Vegas, USA

3rd Annual Summit on
Pediatric Cardiology & Pulmonology
Sep 25-26, 2017 Chicago, USA

11th World Congress on
General Pediatrics & Adolosent medicine
Sep 25-26, 2017 Chicago, USA

2nd Annual Congress on
Infancy, Child Nutrition & Development (ICND)
Oct 19-21, 2017 Atlanta,USA

5th Annual Conference on
Translational Medicine
Nov15-16, 2017 Las Vegas, USA

16th European Pediatrics Conference
Sep 01-03, 2017 Prague, Czech Republic

2nd International Conference on
Pediatric Neurology
Sep 01-02, 2017 Prague, Czech Republic

20th International Conference on
Neonatology and Perinatology
Dec 04-06, 2017 Madrid, Spain

10th World Pediatric Congress
Sep 28-29 2017 Dubai, UAE

PHARMACEUTICAL SCIENCES

4th International Conference and Exhibition on
Pain Medicine
Aug 03-04, 2017 San Francisco, USA

Global Summit on
Emerging Orphan Drugs and Drug Abuse
Aug 23-24 , 2017 San Francisco, USA

2nd International Pharmacy Conference
Sep 01-02, 2017 Las Vegas, USA

4th International Conference on
Clinical Trials
Sep 11-13, 2017 San Antonio, USA

World Congress on
Biotherapeutics and Bioanalytical Techniques
Sep 11-12, 2017 Dallas, USA

6th International Conference on
Forensic Research & Technology
Sep 18-20, 2017 Houston, USA

6th International Summit on
GMP, GCP & Quality Control
Sep 25-26, 2017 Chicago, USA

7th International Conference and Exhibition on
Pharmaceutical Regulatory Affairs and IPR
Sep 25-26, 2017 Chicago, USA

10th Pharmacovigilanace Congress
Sep 21-22, 2017 Charlotte, USA

10th International Conference and Exhibition on
Biologics and Biosimilars
Oct 16-17, 2017 Baltimore, USA

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11th World Drug Delivery Summit
Oct 16-18, 2017 NewYork, USA

5th International Conference on
Clinical Pharmacy
Oct 23-24, 2017 Orlando, USA

9th Annual European Pharma Congress
Jul 10-12, 2017 Madrid, Spain

9th International Conference and Exhibition on
Pharmacovigilance & Drug Safety
Jul 17-18, 2017 Munich, Germany

International Conference on
Environmental Chemistry and Engineering
Jul 24-25, 2017 Madrid, Spain

13th International Conference and Exhibition on
Pharmaceutical Nanotechnology
Jul 24-25, 2017 Madrid, Spain

3rd World Congress and Exhibition on
Antibiotics and Antibiotic Resistance
Jul 31-Aug 01, 2017 Milan, Italy

7th Global Experts Meeting on
Neuropharmacology
Jul 31-Aug 02, 2017 Milan, Italy

2nd International Conference on
Generic Drugs and Biosimilars
Aug 24-25, 2017 Birmingham, UK

14th International Conference and Exhibition on
Pharmaceutical Formulations
Aug 28-29, 2017 Brussels, Belgium

9th World Congress on
Pharmacology
Sep 04-06, 2017 Paris, France

3rd International Conference on
Advanced Clinical Research and Clinical Trials
Sep 20-21, 2017 Dublin, Ireland

8th Annual Pharmaceutical Analysis Conference
Sep 25-26, 2017 Vienna, Austria

International Conference on
Biotech Pharmaceuticals
Oct 23-25, 2017 Paris, France

3rd International Conference and Expo on
Drug Discovery & Designing
Sep 25-27, 2017 Vienna, Austria

European Biopharma Congress
Nov 16-17, 2017 Vienna, Austria

3rd Global Summits on
Herbal & Traditional Medicine
Oct 18-20, 2017 Osaka, Japan

4th World Congress on
Drug Discovery & Designing
Jul 03-05, 2017 Thailand, Bangkok

11th International Conference on
Pharmacoepidemiology and Clinical Research
Jul 06-08, 2017 Kuala Lumpur, Malaysia

8th Global Pharmacovigilance & Drug Safety Summit
Jul 10-11, 2017 Jakarta, Indonesia

9th World Congress on
BA/BE Studies and Biowaivers
Jul 17-19, 2017 Melbourne, Australia

5th International Conference and Exhibition on
Pharmacognosy, Phytochemistry & Natural Products Jul 24-26, 2017 Melbourne, Australia

8th Wolrd Congress on
Pharmacology and Toxicology
Jul 24-26, 2017 Melbourne, Australia

8th Asian Biosimilars Congress
Aug 10-12, 2017 Beijing, China

12th Annual Pharma Middle East Congress
Sep 25-27, 2017 Dubai, UAE

9th Annual Congress on
Drug Formulation & Drug Design
Oct 19-21, 2017 Seoul, South Korea

10th International Conference on
Neuropharmacology and Neuropharmaceuticals
Oct 23-24, 2017 Dubai, UAE

3rd World Congress on
Medicinal Plants and Natural Products Research
Oct 02-04, 2017 Kuala Lumpur, Malaysia

6th Global Congress on
Mass Spectrometry
Oct 18-19, 2017 Osaka, Japan

16th Annual Medicinal & Pharmaceutical Sciences Congress
July 03-05, 2017 Kuala Lumpur, Malaysia

17th International Conference on
Nanomedicine and Nanotechnology in Health Care
Nov 23-24, 2017 Melbourne, Australia

10th International Conferences on
Immunopharmacology and Immunotoxicology
Nov 20-21, 2017 Melbourne, Australia

PHYSICAL THERAPY & REHABILITATION

5th International Conference and Exhibition on
Physical Medicine and Rehabilitation
Sep 11-12, 2017 Antonio, USA

4th International Conference on
Novel Physiotherapies
Aug 21-22, 2017 Birmingham, UK

World Physiotherapists & Physicians Summit
Jul 24-26, 2017 Melbourne, Australia

6th International Conference on
Physiotherapy
Nov 27-28, 2017 Dubai, UAE

PHYSICS

3rd International Conference on
Theoretical and Condensed Matter Physics
Oct 19-21, 2017 NewYork, USA

2nd International Conference on
Astrophysics and Particle Physics
Oct 30-Nov1, 2017 San Antonio, USA

8th International Conference and Exhibition on
Lasers, Optics & Photonics
Nov 02-04, 2017 San Antonio, USA

2nd International Conference on
Atomic and Nuclear Physics
Nov 8-9, 2017 Las Vegas, USA

6th International Conference on
Photonics
Jul 31-Aug 1, 2017 Milan, Italy

7th International Conference on
Laser Optics
Jul 31-Aug 2, 2017 Milan, Italy

2nd International Conference on
Physics
Aug 28-30, 2017 Brussels, Belgium

2nd International Conference on
Quantum Physics and Quantum Technology
Sep 25-26, 2017 Berlin, Germany

International Conference on
High Energy Physics
Dec 11-12, 2017 Madrid, Spain

PSYCHIATRY

20th Euro Congress on
Psychiatrists and Psychologists
Aug 07-08, 2017 Madrid, Spain

23rd International Conference on
Adolescent Medicine & Child Psychology
Sep 28-29, 2017 Berlin, Germany

2nd Experts Meeting on
Forensic Psychology and Criminology
Oct 02-03, 2017 London, UK

24th International Conference on
Psychiatry & Psychosomatic Medicine
Oct 02-04, 2017 London, UK

19th Global Congress on
Pediatric & Child Psychiatry
Jul 12-13, 2017 Chicago, USA

25th World Summit on
Psychology, Psychiatry & Psychotherapy
Oct 19-20, 2017 San Francisco, USA

5th International Conference on
Counseling Psychology
Oct 16-17, 2017 Osaka, Japan

International Conference on
Psychiatry and Mental Health
Nov 20-21, 2017 Melbourne, Australia

10th World Psychiatrists Meet
Dec 07-08, 2017 Dubai, UAE

RESPIRATORY

5th International Conference and Exhibition on
Lung and Respiratory Care
Oct 19-20, 2017 San Francisco, USA

4th International Conference on
Respiratory and Pulmonary Medicine
Jul 17-18, 2017 Melbourne, Australia

SURGERY

9th Orthopedics Expo & Surgeons Meeting
Jul 12-13 , 2017 Chicago, USA

2nd International Conference on
Plastic and Aesthetic Surgery & Medicine
Jul 27-28, 2017 Vancouver, Canada

2nd International Conference on
Anesthesia and Analgesia
Sep 07-08, 2017 London, UK

6th International Conference and Exhibition on
Surgery
Sep 07-09, 2017 London, UK

2nd International Conference on
Ear, Nose and Throat Disorders
Oct 16-18, 2017 Madrid, Spain

10th Global Orthopedicians Annual Meeting
Jul 03-05, 2017 Kuala Lumpur, Malaysia

International Conference on
Ear Nose and Throat Disorders
Jul 06-08, 2017 Kuala Lumpur, Malaysia

International Conference on
Aesthetic Medicine
Jul 06-08, 2017 Kuala Lumpur, Malaysia

4th International Conference and Exhibition on
Rhinology and Otology
Oct 18-20, 2017 Dubai, UAE

TOXICOLOGY

10th Global Summit on
Toxicology and Applied Pharmacology
Jul 20-22, 2017 Chicago, USA

3rd Annual Genomics and Toxicogenomics Conference
Sep 27-28, 2017 Chicago, USA

12th International Conference on
Environmental Toxicology and Ecological Risk Assessment
Oct 19-20, 2017 Atlanta,USA

11th International Congress on
Toxicology and Risk Management
Oct 10-12, 2017 London, UK

International Conference on
Occupational Toxicology and Industrial Health
Oct 16-17, 2017 Dubai, UAE

VACCINES

18th Global Summit and Expo on
Vaccines & Vaccination
Sep 18-19, 2017 Houston, USA

19th World Congress on
Vaccines, Therapeutics for Infectious and Emerging Diseases
Oct 02-03, 2017 Chicago, USA

17th International Conference on
Children Vaccines
Aug 21-22, 2017 Birmingham, UK

27th Asia Pacific Vaccines & Vaccination Conference
Oct 05-07, 2017 Kuala Lumpur, Malaysia

29th Global Vaccines & Vaccination Summit And Expo
Nov 30-Dec 1, 2017 Dubai, UAE

VETERINARY

8th International Conference on
Animal Health and Veterinary Medicine
Oct 02-04, 2017 Toronto, Canada

9th Global Veterinary Summit
Nov15-16, 2017 Las Vegas, USA

7th International Veterinary Congress
Sep 04-06, 2017 Paris, France

16th World Nano Conference

June 05-06, 2017 Milan, Italy

Keynote Forum

Day 1

Thomas Prevenslik, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Thomas Prevenslik

QED Radiations, Hong Kong, China

The causal link between nano-toxicology and human health: DNA damage by UV emission from nanoparticles

The causal link between nano-toxicology and human health is proposed to be the scrambling of genes in DNA by UV radiation from NPs heated in the gut upon the ingestion of food. NPs stand for nanoparticles. By classical physics, NPs conserve body heat by changing temperature. QM differs as the Planck law requires the NP atoms have vanishing heat capacity thereby precluding any change in temperature. QM stands for quantum mechanics. Instead, NPs conserve heat by the emission of EM radiation. For heat capacity to vanish; however, the NP atoms must be placed under nanoscale EM confinement. But NPs having high surface-to-volume ratios confine absorbed body heat almost entirely to their surfaces, the surface heat thereby providing the EM confinement of NP atoms over nanoscale wavelengths. QED then conserves the surface heat by creating EM radiation standing between diametrically opposite NP surfaces, but differs from the complex relativistic QED by Feynman and others. Briefly stated: QED conserves heat supplied to a NP absent heat capacity by creating EM radiation having half-wavelength $\lambda/2=nd$, where n and d are the refractive index and diameter of the NP. For example, QED induces silver NPs having diameter d=90 nm and n=1.35 to emit UVC radiation near $\lambda=254$ nm - a lethal level for DNA damage, and if the scrambled genes are not repaired by the immune system it may lead to cancer, birth defects, etc. QED does not rely on UV produced by speculative multi-IR photon up conversion as the UVC is directly excited. Figure 1 illustrates the UV emission from a layer of 50 nm silver NPs measured by a UVC light meter. The toxicity of NPs in GM food is briefly discussed. GM stands for genetically modified.

Biography

Thomas Prevenslik developed a theory of QED based on QM. By this theory, heat absorbed by NPs is deposited almost entirely in their surfaces because of high surface-to-volume ratios. NP atoms are therefore placed under high EM confinement over nano-scale wavelengths that by the Planck law of QM precludes the atoms from having the heat capacity to conserve heat by changes in temperature. Instead, EM confinement converts the surface heat into standing EM radiation inside the NPs, any NP quantum states having lower transition frequencies than the standing EM radiation frequency are indirectly excited with emission to the surroundings. In the instant topic of nanotoxicology, the emission of standing EM radiation at UV levels damages nearby DNA and by scrambling genes establishes the causal link to diverse human health problems.

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Notes:

Masaki Otagiri et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Masaki Otagiri

Sojo University, Japan

S-nitrosated human serum albumin dimer with superior antitumor activity, long blood retention and excellent EPR effect

Recombinant human serum albumin dimer (HSA-dimer) was produced by the yeast *Pichia pastoris*. HSA-dimer has a longer circulation, compared with HSA-monomer. Thus, HSA-dimer is expected to have an enhanced accumulation in solid tumor via the EPR mechanism due to its large molecular weight (130 kDa). In this conference, we will present a novel DDS system of NO, potential anticancer therapeutic, using HSA-dimer as a carrier, namely, SNO-HSA-dimer. SNO-HSA-dimer treatment induced apoptosis of C26 tumor cells *in vitro*, depending on the concentration of NO. In in vivo experiments, SNO-HSA-dimer was found to specifically deliver large amounts of cytotoxic NO into tumor tissue but not into normal organs in C26 tumor-bearing mice. Interestingly, SNO-HSA-dimer caused a much higher concentration of NOx in the tumor than SNO-HSA-monomer. Moreover, especially, SNO-HSA-dimer has a high level of blood retention. The accumulation of SNO-HSA-dimer in tumor tissue is significantly high compared with SNO-HSA-monomer, suggesting that S-nitrosation of SNO-HSA-dimer further enhanced its EPR effect. Next, we examined whether SNO-HSA-dimer can enhance the activity of other macromolecular antitumor drugs via the augmented EPR effects. As antitumor drugs, we selected N-(2-hydroxypropyl) methacrylamide (HPMA)-zinc protoporphyrin (ZnPP) and doxil. HPMA-ZnPP (mean particle size: 80 nm) forms micelles and doxil has liposomal structure (mean particle size: 90 nm). The tumor growth was significantly inhibited when the two compounds were given simultaneously. The combination of SNO-HSA-dimer inhibited the tumor growth, compared with doxil or SNO-HSA-dimer alone. Furthermore, the combination of doxil and SNO-HSA-dimer significantly reduce the number of lung metastasis. Finally, possible side effects of SNO-HSA-dimer administration were evaluated by measuring blood pressure, heart rate and biochemical parameters. Fortunately, none of these above parameters were significantly affected by repeated administration of SNO-HSA-dimer. Thus, SNO-HSA-dimer strategy is a safe and effective therapeutic approach for improving the antitumor effects of macromolecular drugs.

Biography

Masaki Otagiri is currently a Professor and Dean of Faculty of Pharmaceutical Sciences, Sojo University. He completed his Graduation at Nagoya City University with a PhD degree in 1975. In 1980, he joined Pharmaceutics department, Faculty of Pharmaceutical Sciences, Kumamoto University as an Associate Professor and then promoted to Professor of Bio-pharmaceutics department, Kumamoto University in 1983. After his retirement from Kumamoto University in 2009, he appointed as Professor of Faculty of Pharmaceutical Sciences and Director of DDS Research Institute, Sojo University, Kumamoto.

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Notes:

Pavle Radovanovic, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Pavle Radovanovic

University of Waterloo, Canada

Tuning plasmon resonance of In_2O_3 nanocrystals throughout mid-infrared: Dopant, phase, and electronic structure dependence

Synthesis, properties, and applications of gold and silver nanostructures with tunable localized surface plasmon resonances (LSPRs) have been a subject of intense investigation over the past decade. The focus on these noble metal plasmonic nanomaterials stems from their facile synthesis, stability to oxidation, and the visible-range LSPR transitions. However, among other drawbacks, these nanostructures are also costly for large-scale applications and exhibit high optical losses. Consequently, doped transparent metal oxide nanocrystals have emerged as a new class of unconventional plasmonic materials. In this talk, author will present the results of our recent work on colloidal indium oxide-based plasmonic nanocrystals. Using size-structure correlation, indium tin oxide (ITO) nanocrystals were prepared in the stable bixbyite (bcc-ITO) and metastable corundum (rh-ITO) phase, revealing a dramatic difference in their optical and electrical properties. Unlike rh-ITO, bcc-ITO nanocrystals exhibit a strong LSPR absorption in the near-infrared region due to the presence of free electrons, enabled by the low activation energy donor states. Author will also discuss colloidal synthesis and spectroscopic properties of two new plasmonic nano crystal systems based on In_2O_3, antimony and titanium-doped In_2O_3, and comparative investigation of their electronic structure using combined Drude-Lorentz model and density functional theory. Fundamental understanding of the electronic structure and phase-dependent plasmonic properties allowed us to design and prepare plasmonic In_2O_3-based nanocrystals tunable throughout the entire mid-infrared region. Application of these colloidal mid-IR plasmonic nanocrystals will also be discussed.

Biography

Pavle Radovanovic completed his PhD at University of Washington, Seattle. Following his Post-doctoral studies at Harvard University, he started his independent research career at University of Waterloo in 2006. At Waterloo, he initiated a new research program in Physical-inorganic Chemistry focusing on “The design, synthesis, and fundamental physical and chemical properties of multifunctional low-dimensional materials”. His work has been recognized by number of honors and awards, including Canada Research Chair (NSERC), Early Researcher Award (Ontario Ministry of Research and Innovation), Mobility Award (French Ministry of Foreign Affairs), and CNC-IUPAC Award.

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Notes:

Jean-Paul Lellouche et al, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Jean-Paul Lellouche

Bar-Ilan University, Israel

Surface-engineered tungsten disulfide (WS_2) inorganic nanotubes (INTs-WS_2)–novel chemically modified nanoscale CNT-replacement inorganic nanofillers

Statement of the Problem: Tungsten disulfide nanotubes (INTs-WS_2) and fullerene-like nanoparticles (IFs-WS_2) are extremely hydrophobic and chemically inert inorganic nanomaterials, which quite strongly limits their usefulness in numerous mechanical hardness and tribology-relating research developments and subsequent industrial end-applications. Thus, the covalent attachment of any kind of functional organic and/or biology-relating species remains a quite critical developmental step towards highly innovative high-performance nanomaterials and multiphase composites in the field of essential interfacial versatile chemistries.

Methodology & Theoretical Orientation: In this context of highly challenging functionalization issue of these chemically inert hydrophobic nanomaterials, an innovative method of surface functionalization (versatile poly carboxylation – polyCOOH shell formation) of multi-walled inorganic nanotubes (INTs-WS_2) and fullerene-like (IFs-WS_2) nanoparticles has been successfully developed. This covalent functionalization method makes use of highly electrophilic and reactive ammonium salts (Vilsmeier-Haack (VH) complexes) in order to enable the introduction of a chemically versatile poly acidic (polyCOOH) shell onto the surface of VH-treated inorganic nanomaterials. Moreover, a significant statistical design of experiments (DoE) method has been also involved for global optimization of this multi-parametric poly carboxylation shell generation.

Findings: This INTs-nanotube sidewall polyCOOH-enabling functionalization showed extreme COOH-based chemical versatility for innovative-targeted interfacial chemistries. It enabled the effective fabrication of a wide range of covalent WS_2-INTs surface modifications (polyNH$_2$, polyOH, polySH) via polyCOOH chemical activation (EDC, CDI) and 2nd step covalent nucleophilic substitutions by short □-aminated ligands H^{2}N-linker-X (X outer surface functionality).

Conclusion & Significance: Resulting fully characterized functional INTs-WS_2 (*f*-INTs-WS_2) have a quite wide potential for use as novel functional nanoscale fillers toward new mechanically strengthened and/or conductive composite polymeric matrices (case of hybrid polythiophene-decorated *f*-INTs-WS_2 nano composites, Figure 1). Corresponding novel functional nanomaterials/nanoscale fillers have been also shown to be non-toxic in preliminary toxicity studies, which opens a wide R&D route/progress for relating end-user applications (cellular toxic CNTs nanofillers replacement for example).

Biography

Jean-Paul Lellouche leads a laboratory dedicated to Nano-biotechnology and Polymer Science. His current R&D activities include "R&D developments in the materials science field interfacing with nano-biotechnology, i.e., conducting functional polymers; chemically modified hard nanoscale fillers; UV-photo-reactive nano(micro)particles [surface nano(micro)structuration of polymeric coatings, hybrid metallic catalytic particles]; antibacterial organic/inorganic NPs and coatings and; innovative surface modifications of iron oxide (magnetite/maghemite) NPs towards gene silencing (siRNA/microRNA in *vitro/in vivo* delivery) and anti-parasitic bio-activity". Recently, he deeply focused on and elaborated various innovative organic chemistry-based methodologies for the development of effective covalent versatile interfacial chemistries towards chemically tailored non-toxic mechanically hard functional inorganic: Tungsten disulfide nanotubes and; tribology-effective fullerene-like tungsten disulfide nanoparticles.

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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Plenary

Day 1

Leonard F Register, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Leonard F Register

University of Texas at Austin, USA

Ensemble Monte Carlo methods and results for nanoscale Si and III-V n-channel FinFETs; non-equilibrium degenerate statistics, quantum-confined scattering and more

Particle-based ensemble semi-classical Monte Carlo (SCMC) remains a benchmark in semiconductor device research, because of combination of relative computational efficiency, first-principles transport physics, and the ready ability to model scattering. The latter contributes not just to injection efficiencies, but screening of potential wells, thermalisation of carrier distributions (particularly among energy valleys), and source drain-resistance. However, particle-based ensemble semi-classical Monte Carlo (MC) methods must employ quantum corrections (QCs) to address quantum confinement and degenerate carrier populations to model today's and tomorrow's ultra-scaled MOSFETs. We describe the most complete treatment of quantum confinement effects and carrier degeneracy in a three-dimensional (3D) MC device simulator to date, and apply them to simulation of n-channel Si and III-V FinFETs. Far-from-equilibrium degenerate statistics (beyond hot Fermi distributions), QC-based modeling of surface-roughness scattering, quantum-confined phonon and impurity scattering are considered, in addition to quantum confinement-induced redistribution of charge carriers in real-space and momentum-space. The use of fractional "subcarriers" also minimizes classical carrier-carrier scattering that is incompatible with degenerate statistics, as well as providing improved statistics. FinFET simulations illustrate the contributions of each of these QCs. We show how collectively these modeled quantum effects can substantially reduce and even eliminate otherwise expected benefits of a considered $In_{0.53}Ga_{0.47}As$ FinFET over Si but otherwise identical Si FinFET, despite lower bulk electron masses and higher mobilities and thermal velocities in $In_{0.53}Ga_{0.47}As$, as illustrated in Fig. 1.

Biography

Leonard F Register completed his J. H. Herring Centennial Professorship in Engineering within Electrical and Computer Engineering department at University of Texas at Austin. He is a member of Microelectronics Research Center; Fellow of Institute of Electrical and Electronics Engineers (IEEE) and; Fellow of the American Physical Society (APS). He is a Device Theorist whose research is focused on "Understanding and modeling nano-scale electronic and mageto-electronic devices and the essential physics underlying their operation". His current research interests include "Alternative materials and device geometries for CMOS; alternative materials, state variables and switching methods for beyond CMOS devices and memory; and quantum transport and quantum-corrected semi-classical transport".

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Notes:

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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Yoshinori Sato

Tohoku University, Japan

Defluorination-assisted nanotube-substitution reaction with ammonia gas for synthesis of nitrogen-doped single-walled carbon nanotubes

Nitrogen doping of single-walled carbon nanotubes (SWCNTs) plays a significant role as advanced functional materials. The methods of nitrogen doping are classified into two categories: Direct-synthesis doping and post-synthesis doping. Although a number of direct-synthesis nitrogen doping methods for SWCNTs have been studied, it is hard to control the number of nitrogen atoms and retain the crystallinity of nanotube framework. In contrast, little post-synthesis doping has been reported until now. In addition, these methods require high temperature (>1000 K), and the nitrogen contents of the resulting samples were low (<1.0 at.%). These are considered to be due to the low reactivity of SWCNT surface. Here, we report a new facile method to synthesize nitrogen doped SWCNTs by the reaction of fluorinated SWCNTs (F-SWCNTs) with ammonia gas. F-SWCNTs were prepared by fluorination of highly crystalline SWCNTs (hc-SWCNTs) synthesized by a direct current arc discharge, using a mixture of F2 (20%) and N_2 (80%) gases. The F-SWCNTs placed into a reactor tube reacted with flowing a mixture of NH_3 (1%) and N_2 (99%) gases at the temperature range of 573-873 K for 30 min. The resulting samples were characterized using X-ray photoelectron spectroscopy (XPS), high-resolution transmission electron microscopy (HRTEM), and Raman scattering spectroscopy. The XPS survey spectra of the samples after ammonia gas reaction revealed that nitrogen atoms were introduced into the SWCNTs at all reaction temperatures, and the maximum nitrogen content was estimated to be 3.0 at.% at 673 K. The XPS spectra of N_{1s} region showed the SWCNTs had pyridinic, pyrrolic, and graphitic nitrogen atoms. Structural and electrochemical properties in this presentation will be discussed in detail.

Biography

Yoshinori Sato completed his Bachelor and Master degrees in Materials Science and Engineering at Yamagata University, Japan, in 1994 and 1996, respectively, and PhD in Graduate School of Engineering at Tohoku University, Japan, in 2002. In 2004, he joined the Graduate School of Environmental Studies, Tohoku University, as an Assistant Professor, and in 2010 became an Associate Professor. He joined the Institute for Biomedical Sciences, Interdisciplinary Cluster for Cutting Edge Research, Shinshu University, Japan, as a specially approved Visiting Professor, in 2014. His current research interests include “Defect engineering of carbon nanotubes”. He is an Editorial Board Member of *Scientific Reports* (Nature Publishing Groups). He is a regular member of the American Chemical Society (ACS), the Materials Research Society (MRS), and the Electrochemical Society (ECS).

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Notes:

María E Dávila, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

María E Dávila

Instituto de Ciencia de Materiales de Madrid - ICMM - CSIC, Spain

Novel silicon nano-objects

The discovery of the formation of (OD) silicon nano-dot and (1D) silicon nano-ribbons (SiNRs) on Ag(110) was first reported in 2005. Silicon nano-dot are the smallest form of silicon nano-structures that exploit properties of quantum dots to localize magnetic or electrical fields at very small scales and the nano-ribbons are unique form of silicon grown by direct synthesis (in our case are silicon's stripes grown along the substrate's surface Ag(110) with ultra-thin width (<50 nm) following the bottom-up approach that could be assembled into functional devices. The first step in this aproach is the synthesis and characterization of this form of nano-silicon and the study of their chemical, physical and structural properties. To explore the potential of one-dimensional (1D) silicon nanoribbons SiNRs, it is important to control and vary their structure in terms of length, orientation and diameter, that could modify their electronic properties. In this talk, we will first focus on the synthesis and structural characterization of the Si nano-dot and SiNRs, and then on their fundamental properties and also their functionalization and reactivity. Finally, we will describe possible applications of the SiNRs on nanoelectronic devices.

Biography

María E Dávila research focuses on "The synthesis and characterization of low-dimensional materials with special emphasis on semiconductors". Her interests include "Determining the structural and electronic structure of those materials". She has expertise in "The use of synchrotron radiation techniques to explore the physics and chemistry of low-dimensional materials". She completed her PhD in Condensed Matter Physics at University Auronoma of Madrid in 1996, followed by a Post-doctoral fellowship at University of Uppsala and KTH in Sweden.

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Notes:

Nathalie Raveu, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Nathalie Raveu

LAPLACE - Centre National de la Recherche Scientifique, France

Metamaterial device design with the extended modal theory

Metamaterial device simulation often requires full-wave analysis which implies high memory storage. The computer capacity is sometime not sufficient to solve the problem. To overcome this problem, homogenization techniques may be applied, the results are generally obtained faster. However, the method accuracy may be contested since the results are strongly dependent on the proposed approximations. For waveguide and horn antenna analysis, the extended modal theory (EMT) has been developed. This method is based on metamaterial representation by surface impedance that is dependent on frequency, incidence angle and mode order. They can be isotropic or anisotropic but are independent of the position on the surface. These impedances are then introduced in an analytical dispersion equation to get the propagation constant and consequently the electromagnetic field formulation. The EMT result accuracy is compared successfully to full-wave analysis with computation time reduction. Based on this EMT, a new design methodology is proposed. Firstly, dispersion diagram and field cartography are determined for fixed surface impedances (in frequency and incidence angle). Surface impedance ranges are determined with regard to these results. Then, metamaterials are optimized to satisfy these ranges. Reduced cross-section waveguide with metamaterial walls has been designed (30% smaller than conventional metallic waveguide) with comparable performances (cut-off frequency, fields repartition) thanks to this methodology. First interesting results are also noticed on opened-waveguide antenna performances. The presented designs have been done in rectangular waveguide, circular waveguides are under investigation.

Biography

Nathalie Raveu completed her MS degree in Electronics and Signal Processing in 2000 and PhD in 2003. She is a Professor at National Polytechnic Institute of Toulouse and Research Fellow at LAPLACE-CNRS (Laboratory of Plasma and Energy Conversion). Her research topics are oriented toward development of efficient numerical techniques to address innovative microwave circuits. During the last years, she has developed a new method for SIC's study, metamaterial horns and plasma cavity.

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Claire Deeb

Centre de Nanoscience et de Nanotechnologies, France

Electrically driven nanogap optical antennas

Gaps formed between metal surfaces control the coupling of localized plasmons, thus, allowing gap-tuning targeted to exploit the enhanced optical fields for different applications. Classical electrodynamics fails to describe this coupling across sub-nm gaps, where quantum effects become important owing to non-local screening and spill-out of electrons. The advantages of narrow gap antennas have mostly been demonstrated for processes like SERS that are excited optically, but promising new phenomena appear when such antennas are fed by electric generators. However, the extreme difficulty of engineering and probing an electrically driven optical nanogap antenna has limited experimental investigations of physical concepts at stake in these conditions. The feasibility of structuring electron-fed antennas as nano-light sources has been recently demonstrated; however, this configuration remains very limited. Too much power was lost as heat when operating the optical antenna, and the antenna operation time was limited by the structure lifetime to sustain a bias voltage for a few hours. The innovative structure that we suggest here will cope with all these limitations: ALD dielectric materials substitute the air gap to improve the antenna stability; a quantum efficiency of 10^{-1} is targeted owing to a significantly efficient antenna (two orders of magnitude higher field enhancement). The resulting source will operate at room temperature and have a tunable spectral response (ranging from visible frequencies to THz regime) defined by the antenna geometry and the applied bias. Also, this source will be compact, Si- compatible, and will not request specific emitting materials (e.g. III-V semi-conductors) to operate.

Biography

Claire Deeb is a Research Scientist at Centre de Nanoscience et de Nanotechnologies (C2N), France where she conducts research in the field of Optics, Active Plasmonics, and Nanophotonics. She has an international experience through working at prestigious Argonne National Laboratory (ANL, USA) and at outstanding Northwestern University, where she was specialized in “Advancing plasmon nano laser sources, investigating energy transfer processes at the nanoscale, and exploiting the characteristics of single nano-objects”. She has also developed expertise in Nanofabrication, Nano-characterization, Optical Spectroscopy, and Near-Field Imaging. She has initiated and maintained collaborations with several leading groups at UC-Berkeley and Ludwig Maximilian University of Munich and has led many international projects. She has supervised two PhD theses, has given eight invited talks, and has published over 13 influential papers and one book chapter. Additionally, she has received two PhD awards and is serving the scientific community as an Editor of *Progresses in Nanotechnology and Nanomaterials.*

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Guy Makov, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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June 05-06, 2017 Milan, Italy

Guy Makov

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A novel nanometric cubic phase in monochalcogenide semiconductors – theory and experiment

A new nanometric cubic binary phase has been synthesized in the tin monoselenide and monosulfide systems, π-SnSe, π-SnS, as cube shaped nanoparticles. This new phase has unusual structural properties reflected in a large, 64-atom unit cell and promising optical properties due to the larger band gap and non-centrosymmetric structure of the crystal. It is also environmentally advantageous. This exciting discovery has already led to the publication of over 25 studies in less than 2 years. However, interpretation of the structure, bonding, stability and electronic properties has proven challenging. By introducing by ab-initio density functional calculations the structure, atomic positions and band gaps of these phases were determined and found to be in very good agreement with experimental measurements. Advanced theoretical studies including density functional calculations of the phonon spectrum that determined these phases to be mechanically stable and energetically close to competing structures such as rock salt and orthorhombic. Furthermore theory predicts that the monochalcogenides will exhibit other, as yet experimentally undiscovered, novel phases with promising properties. This study overview the latest results of our calculations and experimental studies.

Biography

Guy Makov is an Associate Professor of Materials Engineering at Ben-Gurion University of the Negev and his research interests is in Materials Physics. He has completed his BSc in Chemistry; PhD in Chemical Physics at Tel Aviv University and Post-doctorate in Computational Materials Physics at Cambridge University and FZ Julich. His research aims to understand materials behavior under extreme conditions of size, temperature and pressure from a physical viewpoint, in particular electronic structure, equilibrium properties and response to mechanical deformations or irradiation. His areas of specific interest include semiconductor nanoparticles and the liquid state, phase diagrams, dislocations, defects and microstructure in metals.

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Notes:

Nano 2017

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June 05-06, 2017 Milan, Italy

Scientific Tracks & Abstracts

Day 1

Nanoscience and Technology | Nano Medicine | Nano Toxicology | Nanophotonics | Nano Composites | Nano Fluidics | Nanotechnology in Agriculture and Food Industry

Session Chair
Jean-Paul Lellouche
Bar-Ilan University, Israel

Session Co-chair
Masaki Otagiri
Sojo University, Japan

Session Introduction

Title: Nanotechnology in liver cancer
Manfred George Krukemeyer, Paracelsus-Hospital Osnabrueck, Germany

Title: Probing atherosclerotic plaque permeability using fluorescent blood pool agents in ApoE$^{(-/-)}$ mouse model
Claudia Cabella, Bracco Imaging SpA, Italy

Title: Nanotechnology: Applications and risks
Akbar S Khan, Defense Threat Reduction Agency, USA

Title: The fantastic voyage of nanoparticles targeting Aβ
Giulio Sancini, University of Milano-Bicocca, Italy

Title: Secondary electron emission from carbon nanoparticles by electron impact
Isabel Montero, Instituto de Ciencia de Materiales de Madrid - ICMM - CSIC, Spain

Title: Reactions of radicals at nanoparticles surfaces
Tomer Zidki, Ariel University, Israel

Manfred George Krukemeyer, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Nanotechnology in liver cancer

Manfred George Krukemeyer
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Therapies of liver tumors display diverse treatment alternatives. The administration of cytostatic coupled with and without iron oxides (Fe_3O_4) has been presented in an experimental series with 36 animals with prior implantation of an R1H rhabdomyosarcoma in the liver, since iron undergoes selective phagocytosis in the liver. In group I, mitoxantrone is injected into the lateral tail vein of the animals (n=12) in a dosage of 1 mg/kg of body weight. Group III (n=12 animals) received mitoxantrone coupled with iron oxide (Fe_3O_4), and group II (n=12 animals) received NaCl, in the same dosage for all groups. In the sonography and in the measurement of the volume, a significantly smaller tumor growth is found in group II compared with group I and III. The volume was measured manually postmortally in mm3 (length x breadth x height). The tumor volume showed the lowest growth in group II, which was treated with mitoxantrone-coupled iron oxides. Three animals from group II died. The autopsy revealed no indication of the cause of death. There were neither thromboses nor allergic reactions in any of the animals. It can be clearly seen that group I has a smaller mean volume and less scatter than group II. The mean of group I is below group II.

Biography

Manfred George Krukemeyer completed his study of Medicine at University of Vienna, University of Kiel and University of Bonn, Germany. He completed his Resident of Surgery in 1991. He is a board approved certified Surgeon, Emergency Medicine Physician and Nutritionist. His research focuses on Oncology, Nanomedicine and Transplantation. He has more than 50 publications.

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Claudia Cabella, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Probing atherosclerotic plaque permeability using fluorescent blood pool agents in ApoE$^{(-/-)}$ mouse model

Claudia Cabella
Bracco Imaging SpA, Italy

Introduction: Atherosclerosis is a progressive disease characterized by accumulation of lipids and fibrous elements in the large arteries, causing the formation of atherosclerotic lesions. With the progression of the disease, plaques can become increasingly complex, showing different elements of dangerousness as thin fibrous cap, lipidic necrotic core, ulcerations at the luminal surface and haemorrhages. Currently, several imaging techniques are able to identify plaques in humans but not to clearly define composition as a predictor of an acute event, causing difficulties on the definition of a proper treatment. In particular, a diagnostic tool aimed to stratify plaques with respect to different permeability (i.e. different dangerousness) could help clinicians to predict the response to a drug-loaded nanosystem based therapy.

Aim: The aim of this study was to investigate the plaque endothelial local permeability in the ApoE-/- mouse model with optical imaging using fluorescent blood pool agents.

Methods: A human serum albumin conjugated with Cy5 (HSA-Cy5) and an albumin binder conjugated with IrDye800 (B26170) were administered to ApoE-/- mice at different weeks of feeding with high fat diet. Arterial trees were removed, imaged with a fluorescence microscope system and then histologically processed.

Results & Conclusions: Plaques developed in different districts of the arterial tree were classified through a grading index (between one and three) with respect to their morphology and displayed higher macrophage content at the early stage of development. Both the fluorescent probes showed higher permeation in early plaques than in more advanced ones, thus correlating with a high inflammatory state. The proof of concept that nano-based systems are able to probe permeability of atherosclerotic plaques, defining which ones are suitable for an anti-inflammatory therapy based on drug-loaded nanoparticles, was reached through OI and could be relatively easily translated in a clinical tool for MRI with the use of a proper Gd-based blood pool agent.

Biography

Claudia Cabella completed her Graduation in Chemistry and PhD in Biochemistry. Since 2001, she works at Centro Ricerche Bracco (CRB, Bracco Imaging SpA) being involved mainly in the field of Magnetic Resonance Imaging and Optical Imaging. Her main skills are preparation of cell cultures and related tumoral animal models and use of MRI and OI scanners. She worked on MRI and OI projects focused on tumoral targeting with different paramagnetic and fluorescent probes and in particular, she worked as a partner in the European research project NanoAthero on a specific task aimed at identifying blood pool agents for atherosclerotic plaque stratification.

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Akbar S Khan, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Nanotechnology: Applications and risks

Akbar S Khan
Defense Threat Reduction Agency, USA

Nanotechnology is science, engineering, and technology conducted at the nanoscale, which is about 1 to 100 nanometers. All things, both living and non-living, are constructed of atoms. The nano-scale sparks so much interest because when a substance is artificially created, structured atom by atom; it can have different or enhanced properties compared with the same substance as it occurs naturally, which includes increased chemical reactivity, optical, magnetic, or electrical properties. Nanotechnologies aim to exploit these properties to create devices, systems, and structures with new characteristics and functions. For example, researchers hope to construct from the very bottom (that is to say, atom by atom) a substance as strong as diamond, but more flexible and far less expensive. It would also be possible to manufacture a substance in the shape and size needed such as a thin string as strong as steel. So far, nanotechnology is applied in various areas: Applied design a water filtration system on the nano-scale that is so efficient, it only lets water molecules through it; used to create filters and sensors to screen out toxins or adjust flavors, and packaging to sense when the food inside is spoiling and alert the customer; the ability to assemble nano-scale particles that could be targeted at certain parts of the body or certain viruses in the blood; economical solar cells to make solar power economical and diminish our dependency on coal, oil, nuclear fuel and fuel wood and; to clean up the environment. To clean up oil spills, imagine a scrubber built from tiny nanotubes that could manipulate the atoms in an oil spill to render it harmless. Just like any new technology, there are varieties of health, environmental and safety risks to this technology from free rather fixed manufactured nanoparticles. In initial studies, manufactured nanoparticles have shown toxic properties. They can enter the human body in various ways, reach vital organs via the blood stream, and possibly damage tissue. Due to their small size, the properties of nanoparticles not only differ from bulk material of the same composition but also show different interaction patterns with the human body. These promises and challenges of nanotechnology will be presented here.

Biography

Akbar S Khan has completed his PhD at University of Oklahoma, USA and Post-doctoral studies at University of Colorado School of Medicine at Denver, USA. He is the Senior Scientist, Program Director and Policy Advisor for a Defense Threat Reduction Agency linked with Pentagon and Office of Secretary of Defense. He has published more than 75 manuscripts in top journals including *Science* and *Nature*, six patents and has been serving as an Editorial Board Member of *Journal of Microbiology and Experimentation* and *Global Security: Health, Science and Policy.*

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Notes:

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The fantastic voyage of nanoparticles targeting Aβ

Giulio Sancini
University of Milano-Bicocca, Italy

Pharmacological treatment of brain diseases is still a difficult task. Many potential therapeutic compounds fail to reach their molecular targets in the brain parenchyma limiting the development of clinically relevant therapeutics. Indeed the concentration of therapeutic compounds into the brain parenchyma depends on various factors but it is clear that the capability to cross the blood brain barrier (BBB) is of paramount importance. The difficulties encountered in the treatment of brain disease with conventional pharmacological tools have created the need for alternative and innovative strategies. Nanotechnology-based approaches might improve the unfavorable pharmacokinetic of molecules unable to overcome the BBB. Recent applications in nanomedicine focus on nanoparticles (NP) as they are promising tools for site-specific delivery of drugs and diagnostic agents, through the possibility to functionalize their surface with target-specific ligands. Treatment options for Alzheimer's disease (AD) are limited because of the inability of drugs to cross the BBB. Previously, we showed that intraperitoneal administration of liposomes functionalized with phosphatidic acid and an ApoE-derived peptide (mApoE-PA-LIP) reduces brain beta-amyloid (Aβ) burden and ameliorates impaired memory in AD mice. Among the different administration routes, pulmonary delivery is a field of increasing interest not only for the local treatment of airway diseases but also for the systemic administration. We investigated lung administration as an alternative, non-invasive NP delivery route for reaching the brain. Our results show that mApoE-PA-LIP were able to cross the pulmonary epithelium *in vitro* and reach the brain following *in vivo* intratracheal instillations. Lung administration of mApoE-PA-LIP to AD mice significantly decreased total brain Aβ (–60%; $p<0.05$) compared to untreated mice. These results suggest that pulmonary administration could be exploited for brain delivery of NP designed for AD therapy.

Biography

Giulio Sancini is an Assistant Professor of Human Physiology and Specialist in Applied Pharmacology. He has focused his research activity mainly on Neurosciences, Nanomedicine, and Nanotoxicology. His research has been funded by European FP7 (NAD Project, Nanoparticles for diagnosis and therapy of Alzheimer's disease and FP6 (BONSAI project, Bio-imaging with Smart Functional Nanoparticles). He has published more than 45 papers in reputed journals and has been serving as an Editorial Board Member of repute. He is Head of the Physiology Unit in Department of Medicine and Surgery at University of Milano-Bicocca.

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Notes:

Isabel Montero et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Secondary electron emission from carbon nanoparticles by electron impact

Isabel Montero[1], Leandro Olano[1], María E. Dávila[1], Isabel Pecharromán[1], Sofía Martín[1], José María Rojo[1], Fernando Sánchez[2], Miguel Angel Sanz[2] and **Martín García-Patrón[2]**

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The secondary electron emission yield (SEY) from materials used in vacuum in high-power RF devices in space missions is the feedback mechanism of the resonant discharge of electrons or multipactor discharge. The maximum work power of those RF systems is unavoidably limited by this effect. Here, we report low-secondary electron emission yield from mixtures of powdered graphite, graphene and carbon nanowires. The samples were tested for SEY, scanning probe microscopies and X-ray photoemission spectroscopy analysis. Insertion and reflection losses measurements of carbon nanoparticles coated RF filters are also critical measurements to analyze the influence of the anti-multipactor coating on the performance quality. Thus, while skin depth at 12 GHz for a typically used material in space borne devices like silver is around 600 nm, coatings of less than 10 nm thickness have demonstrated an improved system overall performance. This is because despite the superior coating materials' resistivity compared to silver, with its inherent worsening on RF losses, the extremely thinness of the covering layer make that worsening almost negligible, meanwhile SEY properties clearly move on the right direction (Fig.1). The SEY experiments were performed in an UHV chamber also equipped with XPS for surface analysis. The SEY was measured over the primary electron energy range of 0 to 1000 eV. The shape of the SEY curve as a function of primary energy seems to be the inverted image of the typical universal SEY curve. The effect of point sources exhibiting low threshold electron emission due to local field enhancement at the oxidized tip emitters was reduced because the roughening the surface leads to lower secondary electron yields. It was achieved that the emitted secondary electrons are reduced to 70%.

Biography

Isabel Montero is currently a Professor at Spanish National Research Council (CSIC), Madrid, Spain. She is the Head of Group Surface Nano-structuring for Space and Terrestrial Communications, Materials Science at Institute of Madrid (ICMM-CSIC), Madrid. She is also Director of Spanish Laboratory on secondary electron emission, CSIC.

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Tomer Zidki, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Reactions of radicals at nanoparticles surfaces

Tomer Zidki
Ariel University, Israel

Radicals reactions are of importance due to their formation near surfaces in a variety of processes, e.g. in catalytic processes, in electrochemistry, in photo-catalytic processes, in environmental processes, etc. It was therefore decided to study the mechanisms and kinetics of reaction of M°-NPs, M=Ag; Au; Cu; Pt; Pd, Pt/Au-alloy-NPs and TiO_2-NPs with methyl radicals. (All the M°-NPs were prepared by reduction of the corresponding salts with $NaBH_4$). These reactions are very fast, approaching the diffusion-controlled limit, forming long-lived transients with (M°-NP)-$(CH_3)_n$ σ bonds. These transients decompose yielding C_2H_6 for Ag°-, Au°- and TiO_2-NPs, CH_4 for Cu°-NPs, for Pt°- and Pd°-NPs most methyl remain bound to the NPs, and are released as methane when H_2 is added to the suspension, though some C_2H_6, C_2H_4 and oligomerization products are formed. The reaction of $.C(CH_3)_2OH$ radicals with SiO_2 supported metal-NPs (M°-SiO_2-NCs, NCs=nanocomposites) is more complicated. At low [M°-SiO_2-NCs], the NCs catalyze the reduction of water by these radicals, for M=Pt the NCs are clearly a catalyst while the Pt°-NPs are not; For M=Ag the NCs catalyze the reduction of water but considerably less than the Ag°-NPs; for M=Au both the MPs and the NCs catalyze the reduction of water. At high [M°-SiO_2-NCs] the reduction of water is considerably decreased and at high doses of radicals the Pt°- and Ag°-NCs do not catalyze the reduction of water by the $.C(CH_3)_2OH$ radicals and induce their disproportionation, and their reduction by H_2, on the NCs surfaces. Thus, the SiO_2 support affects considerably the properties of the M°-NPs and the nature of this effect depends on the nature of the M°-NPs.

Biography

Tomer Zidki has completed his PhD in 2009 at Ben-Gurion University of the Negev and has his expertise in "Mechanistic studies of catalytic reactions at nanoparticles surfaces". His studies show that radicals react extremely fast with metal and supported metal nanoparticles. The products of these reactions are long-lived metal-carbon intermediates in which their lifetime depends on the metal nature. He also has interest in "Catalytic water splitting reactions" and developed very efficient water oxidation catalysts based on co-hydrous-oxide nanoparticles supported on SiO_2 nanoparticles. Recently, he developed new metal-alloys nanoparticles which show superior catalytic activity as well as TiO_2 based nanocomposites which will be used for various catalytic and photocatalytic reactions.

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Notes:

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June 05-06, 2017 Milan, Italy

Young Researchers Forum Day 1

Modan Wu et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Preparation and characterization of prednisone and ciprofloxacin double layer-loaded chitosan nanoparticles for oral delivery

Modan Wu, Alan Casey and **Gordon Chambers**
Dublin Institute of Technology, Ireland

Crohn's disease (CD) is a chronic inflammatory bowel disease that presents as discontinuous transmural inflammation in any portion of gastrointestinal tract. Currently, there is no cure for CD, drug treatment typically prioritizes reducing the inflammation that triggers the symptoms, improving long-term prognosis by limiting associated complications. The predominant form of treatment is a combination of anti-inflammatory and immune system suppresser drugs, in addition to antibiotics such as prednisone (PD) and ciprofloxacin (CPX). In this study, double-layered chitosan (Cs) nanoparticles (NPs) were formulated through crosslinking with tripolyphosphate (TPP) in the presence of PD and CPX via ionotropic gelation method. The physicochemical properties (size and zeta potential) of the nanoparticles were determined by dynamic light scattering, and morphology through scanning electron microscopy. Firstly, PD was encapsulated within the Cs nanoparticle matrix, with average sizes presenting at 150-200 nm, followed by secondary coating with CPX which gave rise to final nanoparticle sizes of 350-450 nm. The maximum drug encapsulation efficiency (EE %) for PD and CPX was 20% and 70%, respectively. EE% was found to be affected by the drug loading concentration, pH value and ratio of chitosan to TPP. The optimal ratio between chitosan and TPP is 3. Release studies on the optimum formulations showed that 30% of CPX released after 3 h on incubation in simulated gastric fluid (SFG, pH 1.2) followed by 60% after 20 h in simulated intestinal fluid (SIF, pH 6.8). The antibacterial activity of PD: CPX loaded NPs and native PD and CPX were assessed against *E. coli* and *S. aureus* via zone inhibition, minimum inhibitory concentration and minimum bactericidal concentration (MBC). The results showed that PD: CPX loaded Cs NPs could inhibit the growth of various bacteria tested. Live/dead staining flow cytometry was used as an alternative to traditional MBC assay to confirm the bactericidal nature of NPs.

Biography

Modan Wu is currently pursuing her PhD in Department of Physics at Dublin Institude of Technology, Ireland. Currently, she is working in the area of Nanotechnology with a focus on "Double encapsulation chitosan nanoparticle preparation, chitosan nanoparticle surface modification and antibacterial abilities".

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Notes:

Kepsutlu Burcu et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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The cytoplasmic escape pathway of polyethylenimine coated nanoparticles is altered by changing the nanoparticle concentration

Kepsutlu Burcu[1], **Guter Michaela-Anna**[2], **Breunig Miriam**[2], **Ballauff Matthias**[1], **Schneider Gerd**[1] and **McNally James**[1]
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[2]University of Regensburg, Germany

Polyethylenimine (PEI) is commonly utilized as a non-viral gene delivery vector because it destabilizes vesicle membranes enabling release of genes to their site of action in the cytoplasm or nucleus. However, the precise mechanism of cytoplasmic release remains unclear. Possibilities include either pore formation or vesicle rupture of either endosomes or lysosomes. Identifying the escape route is critical because lysosomes have digestive enzymes which may impair the gene once inside, and furthermore release of lysosomal contents to the cytoplasm can be detrimental to the cell. To investigate cytoplasmic escape of PEI, we utilized X-ray tomography which can monitor 3D volumes of vitrified cells at 40 nm spatial resolutions without chemical fixation, staining or slicing. With this technique, we find that the mechanism of PEI-nanoparticle (PEI-np) escape to the cytoplasm is concentration dependent. At standard concentrations, PEI-np escapes by rupturing lysosomes. This release mechanism is relatively inefficient with limited nuclear entry of PEI, and with most PEI-np encapsulated within endosomes. Furthermore, we observe morphological signs of apoptosis such as extended mitochondria and chromatin condensation. However, at a ten-fold lower concentration of PEI-np, we detect no ruptured lysosomes and no PEI-np within lysosomes, and importantly we find a higher efficiency of escape to the cytoplasm and nucleus. At these concentrations, we find no mitochondrial elongation and significantly reduced chromatin condensation. In sum, simply by reducing the PEI-np concentration, it appears that PEI-np are directed to a different pathway in which lysosomes are not ruptured, endosomal escape and nuclear entry are more efficient and the adverse effects of PEI-np are reduced. Our results suggest that lower concentrations of PEI-np have multiple benefits for cellular gene delivery.

Biography

Kepsutlu Burcu is a PhD student and has her expertise in “Evaluation of morphological and functional effects of biologically relevant nanoparticles on cells via X-ray tomography”. With this technique, she showed that nanoparticles induce a significant remodeling of cellular organelle composition within non-apoptotic cells. She also utilized this relatively beneficial technique to track nanoparticle distribution within individual organelles and define the endocytosis pathway of nanoparticles. She found out that nanoparticles are localized in lipid droplets which may be the reason for nanoparticle localization within liver. She also found out that multivesicular bodies may exist without a limiting membrane. All these findings provide invaluable knowledge in the drug delivery field and can be utilized for investigation of different types of drugs with cells.

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Notes:

Alexis Gonon et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Functions of antigen presenting cells can be altered by gold nanoparticles exposure

Alexis Gonon, Christian Villiers and **Patrice N Marche**
Institute of Advanced Biosciences-University Grenoble Alpes, France

Gold nanoparticles (AuNP) are increasingly used for therapeutic and diagnostic applications. Due to their small size (<200 nm), NP can increase the diffusion and effectiveness of drugs while facilitating modes of administration. Nevertheless, the potential risks for human health associated to NP exposure remain poorly documented especially about their effects on the immune system. Antigen presenting cells (APC), such as macrophages and dendritic cells, participate in the maintenance of body integrity, engulfing foreign pathogens and delivering signals to other components of the immune system. In this study, we investigated whether these functions could be altered by NP exposures. Using the macrophage cell line J774 and primary bone marrow derived dendritic cells, we have demonstrated that AuNP highly accumulate in APC. Notably, this accumulation did not alter phagocytosis capacity of macrophages. Then, analyzing expression of surface markers CD-86 and MHC-II, we established that NP exposure did not activate bone marrow derived DC. Moreover, further activation of these cells by known activators such as bacterial lipopolysaccharide (LPS) was not impaired by NP. However, in this case, the cytokine response was altered, showing reduced inflammatory cytokine production such as IL-6, IL-12 and IL-23. In a model of antigen presentation *in vitro*, this cytokine profile resulted into an altered development of specific immune responses. AuNP exposure led to an increase in T cell specific cytokines: IL-13 and IL-4 (indicating a shift of classical Th1/Th2 balance towards Th2) and IL-17 (standing for an alteration of T-cell fate towards Th17). All together, these results demonstrated that NP did not alter phagocytosis and DC activation. However, these NP changed cytokine responses after such activation, leading specific T cell fate towards Th2 and Th17 phenotypes. These modifications could impair the immune system physiology and contribute to chronic diseases or autoimmunity.

Biography

Alexis Gonon is a 3rd year PhD student at Institute of Advanced Biosciences (IAB) of Grenoble, France. After a Bachelor degree in Biology at University Joseph Fourier, he completed his Master's degree in Animal Genetics at Paris Diderot University. He has expertise in Mouse Experimentation at Pasteur Institute, France. He is involved in partnerships between IAB and several French and international companies of nanomedicine to test immune safety of these new innovative drugs.

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Notes:

16th World Nano Conference

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Keynote

Day 2

Masahiro Hiramoto, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

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Masahiro Hiramoto

Institute for Molecular Science, Japan

Band gap science for organic solar cells

Conversion efficiency of organic thin-film solar cell reached 12%. In 1991, I proposed pin junction incorporating co-deposited i-interlayer consisting of two kinds of organic semiconductors (so-called bulk heterojunction), which is an indispensable for present organic solar cells. In this paper, band gap science for organic thin-film solar cells including: Seven-nines purification of organic semiconductors; p-n-control of organic semiconductors by impurity doping; doping mechanism investigated by Kelvin band-mapping; p-n-control of the photovoltaic co-deposited films; ionization sensitization of doping and; ppm-doping effects in the simplest n+p- homo junction organic photovoltaic cells will be presented.

Biography

Masahiro Hiramoto completed his PhD in Chemistry at Osaka University in 1986. He started research on Organic Semiconductors and Organic Solar Cells in 1988 at Graduate School of Engineering, Osaka University. He joined the Institute for Molecular Science in 2008 as Professor. He has published over 130 papers. He is an Inventor of Blended Junction and Tandem Junction for organic solar cells.

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June 05-06, 2017 Milan, Italy

Daniel Bellet

University of Grenoble Alpes, France

Transparent and conductive nanomaterials

The past few years have seen a considerable amount of research devoted to nanostructured transparent conductive materials, which play a pivotal role in many modern devices as well as in several energy technologies. The latter concern for instance solar cells and light-emitting devices. Currently ITO (tin-doped indium oxide), the most commonly used material for such applications, suffers from two major drawbacks: Indium scarcity and brittleness. This contribution aims at briefly reviewing the main properties of transparent electrodes as well as the challenges which we still face in terms of efficient integration in devices for several energy technologies. A more specific focus will be devoted to two promising TCMs. First the emerging transparent electrodes based on silver nanowire (AgNW) networks, which appear as a promising substitute to ITO with excellent optical and electrical properties fulfilling the requirements for many applications including flexible devices. In addition, the fabrication of these electrodes involves low-temperature processing steps and up-scaling methods, thus making them very appropriate for future use as TE for flexible devices. Their main properties, the influence of post treatments or the network density and nanowire size but as well their stability will be discussed, thanks to both experimental and numerical approaches. We will also show that low cost and atmospheric pressure spatial atomic layer deposition (AP-SALD) technique drastically enhances the stability of AgNW networks thanks to a very conformal coating. The second studied TCM is based on Fluor-doped Tin Oxide (FTO) which exhibits interesting optoelectronic properties. We have shown recently that an even more promising and innovative TCM can be fabricated from S:TiO2-FTO nanocomposites which shows tuneable high haze factors from almost zero to 60% by using a simple and cost effective method. The resulting optoelectronic properties of such TCM appear very well suited for its efficient integration into solar cells.

Biography

Daniel Bellet became an Assistant-Professor at Grenoble University in 1990 and is Professor at Grenoble INP since 1998. He was junior member at IUF (French Institution to promote excellence in research) from 1999 to 2004, and is now the Director of the Academic Research Community Energies at the Région Rhône-Alpes since 2011. His research is focused on Material Physics and more specifically now on Transparent Conductive Nanomaterials. He is a Co-author of more than 120 peer-reviewed publications or proceedings and eight book chapters.

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June 05-06, 2017 Milan, Italy

Ming-Yong Han

Institute of Materials Research and Engineering, Singapore

Functional nanostructures and energy-driven water splitting

Recent advances in precise control over the shape and size of various nanoparticles have enabled the systematic engineering of their promising properties. To incorporate new functionalities, the different types of nanoparticles are also being coupled to form hybrid nanostructures (e.g. composite, core-shell and Janus) with combined optical, electronic and magnetic properties. In this talk, we will present our recent research on functional nanostructures and energy-driven water splitting.

Biography

Ming-Yong Han completed his PhD in Chemistry at Jilin University. He was at IBM and Indiana University before his current joint appointment as Senior Scientist at Institute of Materials Research and Engineering, Singapore. His research addresses problems at the interfaces of nanoscience, nanotechnology, and optoelectronics/biotechnology. His papers have been cited for ~15,000 times. His research has been highlighted for more than 300 times. He has more than 30 granted patents or pending applications.

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Plenary

Day 2

Jiangtao Cheng, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

June 05-06, 2017 Milan, Italy

Jiangtao Cheng

Virginia Polytechnic Institute and State University, USA

Contact line dynamic of Cassie-state wetting on ultrahydrophobic nano-structured surfaces

We report a molecular dynamics (MD) study on the wetting dynamics of Cassie-state water droplets on ultrahydrophobic nano-structured surfaces. The surface materials were selected to be the amorphous polytetrafluoroethylene (PTFE). Our analysis in the framework of molecular kinetic theory (MKT) indicates that nano-droplets of water exhibit a constant unit displacement length of ~6.05±0.48Å regardless of the surface topography. The contact line friction (CLF) originates from the solid-liquid retarding Gw and viscous damping Gvis, and is also influenced by the fraction of solid-liquid contact. Gw is related to the work of adhesion and is independent of the surface structure. The effects of Gw become manifest in the orderly packing of water molecules at the droplet base. As a result of the solid-liquid retarding, a thin depletion layer of ~2.852 Å thick is formed at the droplet base on smooth PTFE surfaces. However, such depletion phenomenon is mitigated on nanostructured surfaces owing to the sagging of the droplet base. The potential of mean force analysis ascribes Gvis to the fluctuations of relationship of~sin 20 (θ0 is the static contact angle) is derived In liquid density in the vicinity of solid-liquid interface. A heuristic essence, the non-sticking feature of ultrahydrophobic structured surfaces (smaller CLF and larger θ0) indeed roots in the reduced solid-liquid contact. On a smooth PTFE surface, the static friction coefficient, which characterizes the static frictional force exerted on the contact line, was found to be on the same order of magnitude as the dynamic viscosity and increase with the droplet size. A non-dimensional number, which signifies the strength of the inherent contact line fluctuation, was put forward to unveil the mechanism of enhanced energy dissipation in nanoscale, whereas such effects would become unapparent in micro scale. Moreover, regarding a liquid droplet on hydrophobic/super hydrophobic surfaces, an approximate solution to the base radius development was derived by an asymptotic expansion approach.

Biography

Jiangtao Cheng completed his Bachelor's degree in Applied Physics at Peking University in 1991; Master's degree in Computer Science at Purdue University in 2002 and; Doctorate degree in Physics in 2002. In 2007, he accepted an offer from the Teledyne Scientific Company (formerly Rockwell Science Center) as a Research Scientist III for the next four years. He returned to academia in 2011 as an Associate Professor at University of North Texas. In 2015, he joined Department of Mechanical Engineering at Virginia Tech as an Associate Professor. His areas of expertise include: "Sustainable energy and renewable energy; optofluidics and electrofluidics; microfluidics and nanofluidics; thermal-fluid science and heat transfer; thermal management and microelectronics cooling". Recently, he introduced surface plasmon resonance and terahertz technology in his research in thermal-fluid science.

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Vera I Isaeva, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

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Vera I Isaeva

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Nanostructured supports design: A prospective way to modern catalysts constructing

Statement of the Problem: Intense research efforts are focused on the development of nanostructured catalysts thanks to their advanced properties regarding activity and selectivity. Numerous works dealing with nanostructured catalysts relate to metal nanoparticles deposited on different supports. Some reports consider nano-porous matrices with well-controlled surfaces. The modulation of textural and compositional properties of nanostructured carriers allows enhancing the performance of heterogeneous catalysts on their basis in a specific process. Besides creation of nano-porosity using appropriate templates in synthesis course like in zeolites and meso-porous silicas other promising way for the design of nanostructured heterogeneous catalysts is the utilization of carriers composed by nanoparticles. In this context, using a novel type of nano-porous matrices - metal-organic frameworks (MOFs) is a promising approach to rational design of supported catalysts. MOFs are hybrid coordination polymers built from small metal clusters and organic linkers and feature 3D-frameworks comprising nano-dimensional channels, pores or cavities. The purpose of this study is to explore two principal approaches to design of nanostructured MOFs supports for heterogeneous catalysts. Our work was focused on clarifying the possibility to control the activity and selectivity of the heterogeneous catalyst changing the MOF support dispersion between micro- and nanoscale.

Methodology: MOFs materials in form of nanocrystals and micro-granules were utilized as host matrices for metal nanoparticles deposition. In order to administer the particles size and morphology, we have synthesized MOF samples by MW-assisted synthesis at an atmospheric pressure according to the original approach and by convenient solvothermal procedure. The structural characteristics and catalytic performance of M@MOF nano-hybrids based on MOF supports with nano- and micro particles are compared. The catalytic performance of thus obtained M@MOF catalysts was demonstrated in practically important reactions, e.g. hydroformylation and Fisher-Tropsh synthesis.

Findings: This work results demonstrate the strong impact of support crystal size and morphology on the catalytic performance of M@MOFs nano-hybrids.

Conclusion: The activity and selectivity of heterogeneous catalysts can be controlled using MOF materials with different dispersion and morphology as host matrices for MNPs deposition.

Biography

Vera I Isaeva is a leading Researcher at National University of Science and Technology MISiS, Moscow, Russia. Her activity is focused on “The development of nanostructured materials including MOFs and composites on their basis, from synthesis to application, especially for energy saving processes. She has co-authored over 100 publications in peer-reviewed journals and two book chapters.

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Ross A Hatton, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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16th World Nano Conference

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Ross A Hatton

University of Warwick, UK

Copper nanoparticles: Retarding air-oxidation without electrical isolation using organic ligands, and the size dependence of nanoparticle work function

Copper nanoparticles (Cu NPs) have potential as a cost-effective alternative to gold and silver nanoparticles for many emerging applications, including hybrid materials for plasmonic hot-electron devices and photovoltaics, although their potential has sparsely been explored due to their higher susceptibility to oxidation in air. This talk will present the remarkable findings of a systematic investigation into the correlation between the air-stability of Cu NPs and the structure of the thiolate capping ligand, which turns conventional wisdom about ligand selection to retard air-oxidation on its head. The experimental methodology used is based on monitoring (in real time) the oxidation of isolated nanoparticles tethered to a solid substrate via the evolution of the localized surface plasmon resonance. Additionally, the work function of a metal nanoparticle is a key determinant of the energetics at the interface it forms with a surrounding semiconductor and so knowledge of how this property scales with size is critically important for electronic applications. Classical theory predicts that the work function should increase with decreasing diameter, although experimental evidence to support this is disputed. We have exploited the exceptional stability of ligand capped copper nanoparticles to unambiguously show that the work function of small metal nanoparticles increases with decreasing nanoparticle diameter, using Kelvin probe force microscopy. Together these finding open the door to the development of hybrid electronic materials based on colloidal metal nanoparticles and organic/perovskite/transition metal oxide semiconductors in which the copper nanoparticles are strongly electrically coupled to the surrounding semiconductor.

Biography

Ross A Hatton is an Associate Professor of Physical Chemistry at University of Warwick in UK and is currently holder of a UK Engineering and Physical Science Early Career fellowship (2016-2020). He was awarded his PhD in 2003 at University of Nottingham (UK) and a prestigious five year Royal Academy of Engineering Research Fellowship in 2007. He has published 50 papers in peer reviewed international journals and has a long standing interest in “The utility of nanomaterials in emerging photovoltaic devices, including carbon nanotubes, metal nanoparticles and ultra-thin nano-structured metal window electrodes”.

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Rainer Timm

Lund University, Sweden

Atomic-scale characterization of semiconductor nanowire surfaces during device operation

Semiconductor nanowires are promising candidates for next generation electronic and optoelectronic devices and they are a great playground for materials science, because they give a large flexibility in combining different materials. As an example, III-V semiconductor nanowires can be epitaxial grown on silicon without interfacial defects, allowing to utilize the enhanced charge carrier mobility of III-V materials with low-cost, industrially compatible substrates. Due to the small size and high aspect ratio of nanowires, their properties are to a significant extend determined by surface effects. Atomic-scale surface and interface characterization is therefore crucial for understanding and improving the performance of nanowire-based devices. In this talk, author will present different approaches based on scanning tunneling microscopy and X-ray photoemission spectroscopy for correlating atomic-scale surface structure, chemical composition, and electronic properties of III-V semiconductor-based nanowire hetero¬structures and devices. We map those properties across interfaces between different crystal phases, different doping levels, or different semiconductor materials. Author will focus on atomically resolved scanning tunneling microscopy (STM) results of various GaAs, InAs, InP and InSb nanowire surfaces. By combining STM imaging with scanning tunneling spectroscopy (STS) measurements, we simultaneously study the surface structure and local electronic properties across the interfaces of axial nanowire heterostructures. Our most recent efforts include in-operando and *in-situ* studies, where we investigate nanowires during device performance or while their surface becomes modified.

Biography

Rainer Timm completed his Doctor of Science at Technische Universität Berlin, Germany, in 2007. After that, he moved to Lund University, Sweden, where he became an Associate Professor of Physics in 2015. He is Vice Head of the Division of Synchrotron Radiation Research, Coordinator of Master's program in Physics - Materials Science, and member of NanoLund Center for Nanoscience at Lund University. His research focuses on "The characterization of semiconductor nanostructures using scanning probe microscopy and synchrotron-based methods, especially on the correlation of atomic-scale crystal structure, surface electronic properties, and device performance".

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Notes:

16th World Nano Conference

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Scientific Tracks & Abstracts

Day 2

Nano Electronics | Nano Biotechnology | Nanotechnology in Water treatment | Advanced Nanomaterials | Nanotech for Energy and Environment | Nano Materials Synthesis and Characterisation | Nanobiomaterials

Session Chair
Masahiro Hiramoto
Institute for Molecular Science, Japan

Session Co-chair
Daniel Bellet
University of Grenoble Alpes, France

Session Introduction

Title: The ILs-assisted solvothermal synthesis of TiO_2 spheres: The effect of ionic liquids on morphology and photoactivity of TiO_2
Ewelina Grabowska, University of Gdansk, Poland

Title: Synthesis of highly active supported Pt nanostructure via thermo-destabilization of microemulsions
Riny Yolandha Parapat, Technical University of Berlin, Germany

Title: One-pot synthesis of hydrophilic Nd^{3+}:$Ba_{0.3}Lu_{0.7}F_{2.7}$ nano spheres: Crystal structure, X-ray computed tomography and NIR luminescence
Ana Isabel Becerro, Instituto de Ciencia de Materiales de Sevilla (CSIC-US), Spain

Title: Electrowetting actuation of polydisperse nanofluid droplets
Crismar Patacsil, University of the Philippines Diliman, Philippines

Title: Application of nanoparticles as biomolecular carriers
Laleh Alisaraie, Memorial University, Canada

Title: Enzymatic synthesis and characterization of metallic nanoparticles for targeted application on antimicrobial biodegradable polymers
Iva Rezić, University of Zagreb, Croatia

Title: Light-driven reversible shaping on azopolymeric structures
Francesca Frascella, Politecnico di Torino, Italy

Title: Effect of cold atmospheric plasma application on nano-TiN coated Co-Cr dental alloy
Emre Seker, Eskisehir Osmangazi University, Turkey

Title: Effect of cold atmospheric plasma on collagen membrane surface
Basak Kusakci Seker, Eskisehir Osmangazi University, Turkey

Title: Pulsed laser deposited doped Cu_2O thin films for optical application
Gurpreet Kaur, Dr. B. R. Ambedkar National Institute of Technology, India

Ewelina Grabowska, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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The ILs-assisted solvothermal synthesis of TiO_2 spheres: The effect of ionic liquids on morphology and photoactivity of TiO_2

Ewelina Grabowska
University of Gdansk, Poland

In recent years, photocatalytic processes have been intensively investigated for destruction of pollutants, hydrogen evolution, disinfection of water, air and surfaces, for the construction of self-cleaning materials (tiles, glass, fibers, etc.). Titanium dioxide (TiO_2) is the most popular material used in heterogeneous photocatalysis due to its excellent properties, such as high stability, chemical inertness, non-toxicity and low cost. It is well known that morphology and microstructure of TiO_2 significantly influence the photocatalytic activity. These characteristics as well as other physical and structural properties of photocatalysts, i.e., specific surface area or density of crystalline defects, could be controlled by preparation route. In this regard, TiO_2 particles can be obtained by sol-gel, hydrothermal, sonochemical methods, chemical vapor deposition and alternatively, by ionothermal synthesis using ionic liquids (ILs). In the TiO_2 particles synthesis, ILs may play a role of a solvent, soft template, reagent, and agent promoting reduction of the precursor or particles stabilizer during synthesis of inorganic materials. Ionic liquids (ILs) are widely applied to prepare metal nanoparticles and 3D semiconductor microparticles. Generally, they serve as a structuring agent or reaction medium (solvent); however, it was also demonstrated that ILs can play a role of a co-solvent, metal precursor, reducing as well as surface modifying agent. Based on the literature data and preliminary own investigation, it could be concluded that application of ionic liquids in semiconductors synthesis provide a modification of the morphology and enhanced the photocatalytic activity of obtained structures. In this regard, ionic liquids may play a role of a solvent, soft template, reagent, and agent promoting reduction of the precursor or particles stabilizer during preparation of inorganic material. In addition, presence of the IL on the TiO_2 surface probably results in absorption of the photons and excitation of the electrons from HOMO to LUMO orbitals. Mechanism of the photo excitation could be therefore related with transfer of the electron from the LUMO level of IL to the TiO_2 semiconductor conduction band. In this work, the effect of selected ILs structure and amount, as well as conditions of hydrothermal synthesis on the morphology and photoactivity of TiO_2 is presented. The preparation of TiO_2 microparticles with spherical structure was successfully achieved by solvothermal method, using tetra-tert-butyl orthotitanate (TBOT) as the precursor. Various molar ratios of all ILs to TBOT (IL:TBOT) were chosen. For comparison, reference TiO_2 was prepared using the same method without IL addition. Scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray diffraction (XRD), Brunauer-Emmett-Teller surface area (BET), NCHS analysis, and FTIR spectroscopy were used to characterize the surface properties of the samples. The photocatalytic activity of IL-assisted TiO_2 photocatalysts was estimated by measuring the rate of phenol decomposition in aqueous solution as well as formation of hydroxyl radicals based on detection of fluorescent product of coumarin hydroxylation. Phenol was selected as a model contaminant because it is a non-volatile and common organic pollutant found in various types of industrial wastewater.

Biography

Ewelina Grabowska has her expertise in “Heterogeneous photocatalysis, preparations of nanoparticles and nanomaterials, nanotechnology, functional materials, photocatalytic oxidation in presence of titanium dioxide, water and wastewater treatment, remediation technology and chemical technology evaluation”.

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Synthesis of highly active supported Pt nanostructure via thermo-destabilization of microemulsions

Riny Yolandha Parapat[1, 2] and **Reinhard Schomäcker**[1]
[1]ITENAS Bandung - Technical University of Berlin, Germany
[2]National Institute of Technology, Indonesia

In improving the catalytic activity of the noble metals, the surface morphology has become an area of investigation over the past decades. The shape control of metal particles during synthesis, that is to direct the crystallographic planes, coordination of surface atoms and bounding facets of the nanocrystals, is important. These parameters determine the number of atoms located at the edges or corners and accordingly control the surface chemistry which holds the key for improving their catalytic performance. The shape that possesses high-index planes (low-coordinated atoms) is preferable because generally it has high surface energies and thus exhibits high activity. To produce nanoparticles which have high-index planes, the preferred growth direction during synthesis is anisotropic growth. Our first attempt is to produce platinum (Pt) nanocrystals with a small size (2.5 nm) of an isotropic structure i.e., truncated octahedral and deposit them well on support materials. We followed the strategy to keep the small size but change the shape to anisotropic structure of Pt nanocrystals which produces more active sites by means of a weaker reducing agent. We found that the catalysts of anisotropic structure are more active than those of the isotropic ones and even show potential to be applied in a challenging reaction such as hydrogenation of levulinic acid. We continue our effort not only in improving the performance of the nano-catalyst, but also making it in a greener way by using natural reductant such as green tea and grape seed. We found that the produced Pt nano-catalysts are also anisotropic and active at a very mild condition in hydrogenation of levulinic acid which usually is conducted at high pressure and temperature.

Biography

Riny Yolandha Parapat has her expertise in "Synthesis of nano-crystal via microemulsions technique". Her great passion is to create and develop nanomaterial especially in the field of Catalysis. She is also concerned about the environment; her research is now heading to the field of Green Synthesis and Biofuel Production. Her advance knowledge and experience in microemulsions making her able to synthesize and design the super active nano-catalysts in a greener way. She has discovered a new method to synthesize highly active supported nano-catalysts, so-called thermo-destabilization of microemulsions. She is a Lecturer in the course of Kinetic and Catalysis, Experimental Design, Process Control, and Plant Design.

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One-pot synthesis of hydrophilic Nd^{3+}:$Ba_{0.3}Lu_{0.7}F_{2.7}$ nano spheres: Crystal structure, X-ray computed tomography and NIR luminescence

Ana Isabel Becerro[1], **Daniel Gonzalez-Mancebo**[1], **Eugenio Cantelar**[2], **Fernando Cussó**[2], **Arnaud Briat**[3], **Damien Boyer**[3] and **Manuel Ocaña**[1]
[1]Instituto de Ciencia de Materiales de Sevilla (CSIC-US), Spain
[2]Universidad Autónoma de Madrid, Spain
[3]Université Clermont Auvergne, France

In the past few years, lanthanide (Ln)-doped rare earth (RE)-based nanoparticles (NPs) have emerged as an alternative to current imaging and sensing probes based on organic dyes or quantum dots due to the advantageous optical characteristics of Ln^{3+} ions. Among Ln, Nd^{3+} is particularly interesting because it is excited and emits within the first and second biological windows, in which the radiation is weakly attenuated by tissues. Thus, improving the sensitivity of the assays and lowering tissue damage. Among the Ln^{3+}-doped RE-based NPs, fluoride-based matrices are preferred because they show a high luminescent efficiency due to their low phonon energies. Particularly, $Ba_{1-x}Ln_xF_{2+x}$ nanoparticles have shown to be excellent up conversion bio probes as well as optimal contrast agents for X-ray computed tomography. The few reported methods for the synthesis of uniform $Ba_{1-x}Ln_xF_{2+x}$-based NPs required the use of high T (~300 ºC) and oleic acid as capping agent, which led to hydrophobic particles and needed therefore a second step to make them water dispersible. The purpose of this study is to find a synthetic route of Nd^{3+}-doped Ba, Lu fluoride NPs using a one-step process in the absence of any capping agents to render hydrophilic uniform nanoparticles at much lower temperatures than the methods cited above. Findings: Uniform, 50 nm diameter, hydrophilic Nd^{3+}-doped $Ba_{0.3}Lu_{0.7}F_{2.7}$ NPs were synthesized using a simple precipitation method consisting in the aging of an ethylene glycol solution containing Lu acetate, $Ba(NO_3)_3$ and a fluoride-based ionic liquid. The composition and crystal structure of the un-doped NPs were analyzed with ICP and XRD, which revealed a BaF_2 cubic crystal structure that is able to incorporate 70 mol% of Lu^{3+} ions. This finding contrasts with the reported phase diagram of the system, where the maximum solubility is around 30 mol%. Nd^{3+} ions up to, at least 2.5 mol%, entered the $Ba_{0.3}Lu_{0.7}F_{2.7}$ cubic structure without altering the morphology of the un-doped NPs. The Nd-doped NPs exhibited NIR luminescence when excited at 810 nm and absorbed X-ray photons, thus demonstrating to be useful as contrast agents in both bio-imaging and X-ray computed tomography.

Biography

Ana Isabel Becerro completed her Degree in Pharmacy at University of Seville in 1992, Degree in Optics at University of Barcelona in 1993 and Doctor in Chemistry in 1997. She completed her Post-doctoral degree at Forschung Institut für Geochemie und Geophysik (Bayreuth, Germany) from 1998 to 2000, with a Marie Curie Research Training Network contract. In 2001, she came back to the Material Science Institute of Seville [Spanish Research Council (CSIC) - University of Seville (US)]. She has published more than 75 scientific papers in SCI journals and presented more than 50 contributions to scientific meetings. She has supervised 4 PhD students and a number of master degree students.

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Notes:

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Mechanism for the Enhanced Electrowetting Actuation of Gold Nanofluids

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Electrowetting experiment is done with varying concentrations (in μM) of gold nanofluid (deionized water containing polydisperse gold nanoparticles with an average size of 10 nm): 0.5, 0.33, 0.25, 0.05, 0.01, 0.005 and deionized water (no gold nanoparticle, control fluid). The result showed different electrowetting response for the different concentrations. To explain the mechanism for the observed enhanced electrowetting actuation, the specific capacitance, C, is calculated from the voltage versus contact angle graph for each concentrations. For the control fluid, the calculated specific capacitance is 0.0012 F/m2. The 0.5μM gold nanofluid concentration showed a corresponding C=0.0097 F/m2; the 0.33μM gold nanofluid concentration with C = 0.0049 F/m2 ; the 0.25μM gold nanofluid concentration with C = 0.0027 F/m2 and the 0.05μM gold nanofluid concentration, with C = 0.0015 F/m2. The 0.005μM and the 0.001μM gold nanofluid concentrations both have electrowetting behavior identical to the control fluid. The values imply that the presence of gold nanoparticles electrically affects electrowetting by specifically increasing the capacitance with increasing concentration of the nanoparticles. This increase in specific capacitance can only be explained if we see that the gold nanoparticles as collectively acting like a non-polar dielectric medium between the electrodes. When voltage is applied between the electrodes, charges may build up at the gold nanoparticle surfaces and are polarized. Polarized gold nanoparticles will line up with the applied potential and create an induced potential opposite this applied external potential resulting in the increase of the capacitance. Additional induced charges are built up at the interface (at the bottom of droplet) due to the polarized gold nanoparticles in addition to the induced charges from the water dielectric medium. The droplet flattens (decrease in contact angle) due to electromechanical force at the triple line interface. The greater the applied voltage, the more additional induced charges due to the contribution of the polarized gold nanoparticles are accumulated at the interface (bottom of droplet) and thus the greater the electomechanical force. This capacitance and electromechanical model may explain this electrowetting phenomena involving gold nanofluid droplets.

Biography

Crismar Patacsil completed his MS in Physics at University of Philippines Diliman, Quezon in 2004 and is currently a PhD student at Ateneo de Manila University under Dr. Rapahel Guerrero as his dissertation adviser. Currently, he is an Assistant Professor in Department of Physical Sciences, College of Science at University of Philippines Baguio, Baguio City.

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Laleh Alisaraie, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Application of nanoparticles as biomolecular carriers

Laleh Alisaraie
Memorial University, Canada

Carbon nanotubes (CNTs) can play key roles in small molecule transportations. They can cross through the cell membrane while maintaining interactions with their cargos. There are a wide range of molecules that can be carried by these nanoparticles which include both small chemicals and proteins. In this talk, I will discuss our recent findings regarding some of the possible modifications of CNTs structures for their application as efficient nano-carriers for certain biomolecular cargos.

Biography

Laleh Alisaraie is an Assistant Professor at School of Pharmacy, Memorial University of Newfoundland, Canada.

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Enzymatic synthesis and characterization of metallic nanoparticles for targeted application on antimicrobial biodegradable polymers

Iva Rezić, Ana Vrsalović Presečki, Maja Somogyi Škoc, Lela Pintarić, Vanja Ljoljić Bilić, Ivan Kosalec and **Suzana Jakovljević**
University of Zagreb, Croatia

Statement of the Problem: Limited natural resources and the exponential growth of the population lead to dramatic changes in production, consumption, transportation and storage of food. The application of nanoparticles in packaging affects its antibacterial, mechanical, thermal and barrier properties, but also increases the safety of food and shelf life of the product. This work therefore, presents the methodology of synthesis, characterization and application of metallic nanoparticles as antimicrobial components for application on biodegradable polymers foreseen as the future packaging materials.

Methodology & Theoretical Orientation: We apply enzymes to synthesize metallic nanoparticles, reveal the kinetics and mechanism of reactions, and characterize nanoparticles by classical (SEMEDX, FTIR, ICPOES, GFAAS) and beyond-state-of-the-art (GEMMA, PDMA, MALDI-TOF-MS/MS) instrumental methods. After synthesis and characterization, the antimicrobial activity of nanoparticles was tested against model microorganisms (*Staphylococcus aureus, Escherichia coli, Candida albicans*) using statistical method design of experiment. Antimicrobial mixtures of nanoparticles were further applied with dip-coating on polymers by sol-gel process using 3-glycidyloxypropyltrimethoxysilane (GLYMO) precursor.

Findings: We produced metallic nanoparticles, optimized their antimicrobial activity and characterized polymers with antimicrobial layers. Enzymatic synthesis of nanoparticles at moderate temperatures ensured mild production conditions and enabled lower energy consumption. In our future work, we plan to produce a prototype of antibacterial biodegradable packaging using additive technology (3D-printing).

Conclusion & Significance: This multidisciplinary research work is significant for different scientific, industrial and technological applications: Enzymatic synthesis of nanoparticles is economically and ecologically favorable approach; usage of biodegradable polymers with metallic nanoparticles is the priority of food and packaging industry; optimization of highest antimicrobial activity of NPs mixture using design of experiment offers an innovation in formulation and; prototyping by 3D printing enables wide variety of additional applications. Therefore, we expect a significant outcome of this project and strengthening further collaboration with our industrial and academic partners.

Biography

Iva Rezić is the Head of Department of Applied Chemistry at University of Zagreb where she leads the group for synthesis and characterization of metallic nanoparticles. She has two PhDs and expertise in Material Science and Characterization, Nanotechnology, Chemical Trace Elements Analysis and Statistical Modeling of Complex Mixtures. She is an Editor-in-Chief of *TEDI* journal, Editor of four and Reviewer of 33 journals. She actively participates as a member of various associations, commissions and committees.

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Notes:

Francesca Frascella, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Light-driven reversible shaping on azopolymeric structures

Francesca Frascella
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In recent years, micro and nano-structured polymeric films have attracted significant interest because of their promising potential application in many areas; including micro-fluidics, smart surfaces, photonics and tissue engineering. Nowadays, a plethora of processing technologies are available for fabricating complex polymeric architectures which are mostly static in nature, i.e., they cannot be morphologically modified once fabricated. Light-responsive materials such as azobenzene polymeric compounds (generally referred to as azopolymers) can overcome such a limitation opening the opportunity to active manipulate in terms of morphology, physical and mechanical properties a pre-patterned architectures, which are intrinsically static once fabricated. In azopolymeric films, a directional mass-migration effect can be triggered depending on the radiation wavelength, intensity, polarization state and topological charge, e.g. in vortex beams. Despite the underlying mechanism is still unclear to some extent, mass-migration in azopolymers has been widely exploited in the past for fabricating large-area periodic microstructures also known as Surface Relief Gratings (SRG) by exploiting intensity and/or polarization interference. In such a situation, lithographed azopolymeric patterns that could be subsequently modified by irradiation in controlled conditions are particularly attractive. For instance, irradiation with a linearly polarized light can elongate circular micro-pillars resulting in an ellipsoidal shape, wherein the elongation is along the polarization direction of the illumination beam. The light-induced contraction and expansion reshaping strategy of a polymeric structure shows exciting potential for a number of applications including microfluidics, lithography and tissue engineering. Tuning cells behavior in response to material manipulation cues is a promising goal in biology.

Biography

Francesca Frascella completed her degree in Advanced Chemical Methodologies at University of Torino in 2005 and PhD in Materials Science and Technology at Politecnico di Torino in 2009. During her PhD, she spent four months at Center for Photonics and Photonic Materials, Department of Physics of University of Bath (UK). Since 2009, she is a Post-doc Researcher at Politecnico di Torino. Her past activities concerned the preparation and surface chemical modification of porous silicon-based materials for applications in sensing. Furthermore, she was devoted to the chemical modification of several materials surface, both inorganic and polymeric, especially by means of plasma-assisted techniques. Currently, her research activity is focused on “New azo-polymer materials for reversible patterning of substrates hosting living cell cultures”. She is author of more than 25 peer-reviewed papers in international journals.

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Notes:

Emre Seker et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Effect of cold atmospheric plasma application on nano-TiN coated Co-Cr dental alloy

Emre Seker, Basak Kusakcı Seker and **Suat Pat**
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Since Co-Cr alloy is the most widely used base material for constructing dental prosthesis, many different efforts have been provided to enhance their surface energy and wettability with various surface modification procedures. Adhesion capability and surface activation of restorative materials remain as a goal for reliable clinical performance of dental restorations. Durable and strong adhesive bonding between the frameworks or between different materials in the structure of prosthesis is necessary to withstand the varied challenges in the oral environment. The acceptable bond strength depends on the wettability between the adhered surfaces and adhesive, which is necessary to ensure adhesion. Wetting is the first condition for providing adhesion. Titanium nitride (TiN) is a member of the refractory transition metal nitrides family which exhibits properties characteristic of both covalent and metallic compounds. TiN has many advantages such as including intrinsic biocompatibility, sufficient corrosion resistance, reduction of bacteria, and its suitability for use in patients who have a metal allergy to vanadium, nickel and cobalt. TiN is also a suitable material for the hard coating of various dental materials and dental surgical instruments in order to improve their surface properties. In particular, the TiN coating that provides a diffusion barrier and biocompatible surface has been applied using a metal sputtering technique in order to fabricate biocompatible prostheses. Seven Co-Cr discs were machined and smoothed with silicon polishing discs. The RF sputtering system was used for the depositions of TiN. An RF power supply of 13.56 MHz was used. Mechanical polishing was performed to reduce the surface roughness. The samples were cleaned in 96% ethanol and distilled water. The dental samples were coated with a thickness of 100 nm TiN. The surface roughness was evaluated in a control group and in groups with different plasma-jet exposure application times (30-60-120 seconds). Kinpen 09 plasma jet was used in this study. The distance between nozzle and sample surface was approximately 5 mm. Argon gas was used as carrier gas at a flow of 5l/min at 2.5 bar pressure. The average surface roughness (Ra) and contact angle (CA) measurements were recorded via an atomic force microscope (AFM) and tensiometer, respectively. According to the results with an increase in the application time, an apparent increment was observed for Ra and a remarkable reduction in CA was observed in all groups. It is concluded that the argon plasma-jet technology could enhance the roughening and wetting performance of Co-Cr dental material.

Biography

Emre Seker completed his PhD at Ankara University and Near East University respectively. He is a Lecturer and Clinical Specialist at Eskisehir Osmangazi University, Department of Prosthodontics. He has published more than 30 papers and presentations and continues to study on “Surface treatment techniques of dental materials, CADCAM implant dentistry and plasma technology”.

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Basak Kusakci Seker et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Effect of cold atmospheric plasma on collagen membrane surface

Basak Kusakci Seker, Emre Seker and **Suat Pat**
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The collagen membrane is used in guided tissue regeneration which include the regeneration of lost tissues that surround the teeth or implants by forming new bone, new cementum, and (around teeth) a new periodontal ligament. Collagen membranes should be biodegradable, biocompatible, have high porosity in the nano-size range for cell attachment and have adequate mechanical strength. The aim of this pilot study was to evaluate the effect of non-thermal atmospheric pressure plasma (NTAP) jet application on the wettability and contact angle (CA) of collagen membrane by tensiometer. Four collagen membrane specimens were prepared and cut with area of 5x5 mm. Plasma jet (kinpen 09) was used in this study. The plasma stream had a length of 11 mm. The distance between nozzle and membrane was approximately 5 mm. Argon gas was used as carrier gas at a flow of 5l/min at 2.5 bar pressure. Roughly 15 mm^2 of membrane surface was treated for 30 second, 60 second and 120 second with plasma jet. Tear tests (tensiometer) give a better comparison among different materials as they provide information on the energy or force required to propagate a tear through the material. The test was initiated with a 7 mm long central cut. Tear propagation was monitored as a function of the vertical displacement at the constant rate of 1 mm/min, up to a maximum displacement of 10 mm. According to results of this study, a remarkable reduction in CA was observed in all groups and it can be assumed that NTAP application improve the wettability over previous collagen membranes which is an important benefit because of the porous structure of membrane support cell attachment and proliferation.

Biography

Basak Kusakci Seker has completed her PhD at Hacettepe University and Near East University respectively. She is a Lecturer and Clinical Specialist at Eskisehir Osmangazi University, Department of Periodontology. She has published more than 20 papers and presentations and continues to study on “Dental implant surgery, dental laser applications, plasma disinfection and wound healing and bone regeneration techniques”.

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Gurpreet Kaur et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Pulsed laser deposited doped Cu_2O thin films for optical application

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[2]Indian Institute of Technology Roorkee, India

Cuprous oxide, (Cu_2O) is a promising p-type semiconductor, finds applicability in a wide range of photo conversion devices. Pulsed laser deposition technique is employed to grow doped Cu_2O thin films. Doping mechanism of silver (Ag), aluminium (Al) and (Ag+Al) in Cu_2O thin films is illustrated in this report. The Al, Ag doped and (Al+Ag) co-doped Cu_2O targets are prepared by the solid state reaction method by mixing Cu_2O powder with Al_2O_3 and Ag_2O, powders respectively, in stoichiometric ratios. The doping profile of both Al and Ag in Cu_2O is kept 5%. For co-doped, it is 2.5% Al and 2.5% Ag in Cu_2O. An Nd:YAG laser operating at wavelength 355 nm and energy 100 mJ/pulse is used to ablate the targets of (Cu_2O:Al), (Cu_2O:Ag) and (Cu_2O:Al:Ag). X-ray diffraction analysis depicts the polycrystalline nature of the films, with a cubic crystal structure and having small crystallite size. UV-visible optical transmittance versus wavelength spectrum of these films describes low transmission i.e. 10-20%, due to the large absorption coefficient (α) for Cu_2O material. The large values of absorption coefficient enable the photovoltaic and optical applications of the Cu_2O films. The energy band gap of the films is determined using the Tauc's plot relation, shown in figure 1. The optical band gap is increased with doping and it varies in the range of 2.65–2.84 eV. The increased band gap of doped thin films is attributed to the substitution of Al and Ag ions for the oxygen ions. Due to this substitution, width of the valence band is reduced to enlarge the band gap. Room temperature current voltage (I-V) plot indicates low resistivity ($\rho \sim 10^{-2}$ Ω-cm) of the films. The obtained results are of high relevance and indicate potential applications of the grown thin films in devices such as solar cells, photo detectors and optical sources.

Biography

Gurpreet Kaur has completed her PhD in Physics at Indian Institute of Technology, Roorkee, India in 2016. She has been working as an Assistant Professor in Department of Physics at Dr. B. R. Ambedkar National Institute of Technology, Jalandhar since 2016. Her current research area of interest is "Synthesis of nanomaterials for optical device applications".

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Notes:

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Video Presentation

Day 2

Peng-Sheng Wei, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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The effects of laser characteristics on melting of nano-particles on a surface

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This study numerically investigates transport processes during the melting of an array of nanoparticles on a surface subject to an electromagnetic wave or laser beam in a transverse magnetic (TM) mode. The TM mode represents magnetic field to be perpendicular to the incident plane of electrical field. A systematical investigation of heating and melting of an array of nanoparticles on a surface is essentially required to understand 3-D printing and different types of plasma processing and nanotechnology. The results show that electromagnetic wave propagating along the boundary between two media leads to a distributed heat input and magnetic force on the surface. Fluid flow and heat transfer associated with surface deformation result in complicated transport phenomena between nanoparticles, especially for different frequencies and radii of incident electromagnetic wave.

Biography

Peng-Sheng Wei completed his PhD in Mechanical Engineering department at University of California, Davis, in 1984. He has been a Professor in Department of Mechanical and Electro-Mechanical Engineering of National Sun Yat-Sen University, Kaohsiung, Taiwan, since 1989. He has contributed to advancing the understanding of and to the applications of electron and laser beam, plasma, and resistance welding through theoretical analyses coupled with verification experiments. He has published more than 80 journal papers and given keynote or invited speeches in international conferences more than 70 times. He was a Fellow of American Welding Society (AWS) in 2007 and a Fellow of American Society of Mechanical Engineers (ASME) in 2000. He has been the Xi-Wan Chair Professor at National Sun Yat-sen University (NSYSU) since 2009.

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Norberto Arzate et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Optical spin injection in atomic monolayers

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Statement of the Problem: Two-dimensional materials have recently attracted great attention from the scientific community due to their interesting and quiet different properties from their bulk counterparts. For instance, the band gap value depends on the number of atomic monolayers that the material has. In addition, some materials might have spin-polarized states, which is favorable for studies of spintronics. Here, we have studied theoretically the phenomenon of optical spin injection which is generated when incident circularly-polarized light creates spin-polarized electrons into the conduction bands of the atomic system. We analyze the respective one-photon optical spin injection spectra some 2D systems. In particular, we discuss corresponding results for the atomic transition-metal dichalcogenide monolayers of molybdenum disulfide MoS2.

Methodology & Theoretical Orientation: We present calculations for spectra of the degree of spin polarization that is calculated in a full-band structure scheme. In order to obtain wave functions and eigenvalues of the quantum mechanical system, we have employed density functional theory. In order to correct the band gap energy, the quasiparticle GW approximation is applied.

Findings: It has been obtain the maximum value of 1 for the absolute value of the degree of spin polarization of the electrons for the one monolayer structure at the K valley.

Conclusion & Significance: It is possible to inject spin-polarized electrons to the conduction bands of atomic semiconducting monolayers by the incidence of circularly polarized light. This effect might be useful for the coherent control of the spin of the electron in spintronic devices.

Biography

Norberto Arzate has been involved in theoretical studies of the linear and nonlinear optical response of surfaces and nanostructures. In particular, he has performed numerical calculations of spectra of dielectric function, second order nonlinear susceptibilities. Besides, he has applied the optical techniques of reflectance anisotropy and second harmonic generation in order to study surfaces. Recently, he has been interested in coherent control phenomena such as optical spin and current injection in surfaces and atomic monolayers .

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Notes:

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Poster

Andras Dallos et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Energy mapping and surface energy heterogeneity profiles of surface-modified carbon nanotubes using IGC-SEA technique

Andras Dallos, Fruzsina Gerencser and **Csilla Varga**
University of Pannonia, Hungary

Statement of the Problem: Carbon nanotubes are promising support for Co/Mo-catalyst used in production of fuel-components of high hydrogen/carbon ratio in hydrocracking and reinforcing constituent for nanocomposites. To avoid agglomeration in a supported nanoparticulate catalyst or nanocomposites, the CNT surfaces are often exposed to modification processes using poly-functional coupling agents. The quantitative characterization of the effectiveness of surface treatments by surface energy mapping is of high importance.

Methodology & Theoretical Orientation: Inverse gas chromatography (IGC) was used for surface energy analysis, which supplies information on surface characteristics of the nanoparticles. Experimental results obtained by a Surface Energy Analyzer (SEA) for untreated and olefin maleic-anhydride copolymer treated carbon nanotubes are presented. The effectiveness of surface treatments was quantified in terms of dispersive and specific surface energies, and of the acid-base parameters of the CNT surfaces. Furthermore, the surface energy heterogeneity profiles and distributions of the CNTs were determined by a unique energy mapping.

Conclusion & Significance: The surface energy mapping of the CNT samples indicated that the dispersive and specific components of surface energy of untreated CNT sample are quasi-constant in the region of low surface coverage. The relatively high values of dispersive surface energy can be attributed to a large nonpolar interaction potential of CNT, which explains its high agglomeration tendency. However, the surface energy heterogeneity profiles of the treated CNTs prove that both the dispersive and the specific parts of surface energy of the copolymer modified CNT surface are slightly non-homogenous in the region of low surface coverage. The quantitative surface energy analysis obtained by IGC/SEA methodology demonstrated that surface treatments of CNTs resulted in significant changes of surface energies: the dispersive component of surface energies of the CNTs decreased by 60% and the specific surface energy of CNT surfaces increased more than threefold.

Biography

András Dallos has expertise in "Experimental and computational physical chemistry: Measurement and modeling of bulk and surface properties of pure compounds, mixtures, macromolecules, nanomaterials and composites". His research activities focus on the inverse gas chromatographic and calorimetric determination of intermolecular interactions, which are relevant to the design of nanocomposites and to the calculations of phase equilibria and separation processes. He has built new QSPR multivariate nonlinear models based on artificial neural network and DFT for the estimation of the physical-chemical properties of compounds using COSMO sigma moments as molecular descriptors. His vapor-liquid equilibrium and evaporation models are based on the combination of the COSMO-RS theory and the CFD methodology.

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Jacek Wojnarowicz, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Size control mechanism of ZnO nanoparticles obtained in microwave solvothermal synthesis

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Institute of High Pressure Physics, Poland

Statement of the Problem: The properties of ZnO nanostructures result to a large extent from the specificity of the method of production: Conditions of synthesis, nature of the solvent and substrates used. The way to control and understand the impact of synthesis parameters on the properties of the obtained ZnO NPs is to learn the mechanism of their synthesis. The solvothermal method is a popular method of synthesizing ZnO NPs. The relevant literature reveals several attempts to roughly understand the mechanism of solvothermal synthesis of ZnO. The process examined was consisted in the microwave heating of a $Zn(CH_3COO)_2 \bullet 2H_2O$ solution in $C_2H_4(OH)_2$ in a pressure chamber. Author observed that during the synthesis of ZnO NPs, the size of ZnO was a function of water concentration in the solvent used. By controlling the water concentration in the precursor, it is possible to control the size of the obtained ZnO NPs in a repeatable manner.

Methodology & Theoretical Orientation: The aim of this study was to determine the impact of H_2O on the course of ZnO synthesis reaction. Author examined the following properties of products for different synthesis durations: phase composition, morphology, chemical composition, functional groups, pycnometric density, specific surface area, specific conductance of suspension, pH of suspension, change of H_2O content.

Findings: The intermediates of the microwave solvothermal synthesis reaction of ZnO are $Zn_5(OH)_8(CH_3COO)_2 \bullet xH_2O$ as well as water and esters.

Conclusion & Significance: The mechanism of the solvothermal synthesis of ZnO can be divided into three stages: Formation of the intermediate, $Zn_5(OH)_8(CH_3COO)_2 \bullet xH_2O$, and its growth; decomposition of $Zn_5(OH)_8(CH_3COO)_2 \bullet xH_2O$ to ZnO and; growth of ZnO. The greater the water content in the precursor, the lower the temperature and the greater the speed of $Zn_5(OH)_8(CH_3COO)_2 \bullet xH_2O$ decomposition. $Zn_5(OH)_8(CH_3COO)_2 \bullet xH_2O$ decomposes into ZnO sized ≈13-15 nm, which grow until the building material, $Zn(CH_3COO)_2 \bullet 2H_2O$, is exhausted.

Biography

Jacek Wojnarowicz researches and develops the microwave hydro-/solvothermal synthesis of nanoparticles (NPs). He has developed an innovative technology of microwave solvothermal synthesis of ZnO NPs with controlled size. The performance of syntheses of NPs enabled him to learn the advantages and disadvantages of commercial microwave reactors. He makes use of the acquired knowledge to develop new types of microwave reactors constructed in the Laboratory of Nanostructures, Institute of High Pressure Physics-Polish Academy of Sciences, dedicated to hydro-/solvothermal syntheses of NPs. He participated in the creation of the new design of the specialized MSS2 reactor. The unique design of the MSS2 microwave reactor enables him to examine the mechanisms of the NPs synthesis reaction.

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Laleh Talavat et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Release of anti-cancer agent, doxorubicin, from molecular imprinted nanoparticle polymer coated multi-walled carbon nanotubes, based on chemical affinity profiles (Hansen method)(II)

Laleh Talavat, Arta Babapour and **Ali Güner**
Hacettepe University, Turkey

In drug-delivery systems, molecular imprinted monomers@CNT@vinyl functional is synthesized for the releasement of doxorubicin (DOX). The calculations for choosing the best reactants were done based on the utilization of chemical affinity profiles (Hansen method). The interaction dynamics between drug-monomer-solvent is the back bone in the thermodynamic calculation of the molecular imprinting (MIP) and the controlled drug release (CDR) components. Cohesive energy density of components (CED)/resolution parameters, sub-parameters (δd, δp, δh) and sub-parameter combinations (δa, δv) are the important characteristic of desired profile. High chemical affinity establish some problems in controlled release, however, low chemical affinity causes instantaneous releasement. Based on the thermodynamic computational calculations, 2-trifluoromethyl acrylic acid and (hydroxyethyl) methacrylate were chosen as optimal monomers to synthesize MIP. For controlled release of the anticancer agent, doxorubicin, in simulated body fluid (SBF) was chosen. In order to increase the release efficiency, these polymers have been imprinted on CNT nanoparticles (NPs) and were characterized by infrared (FTIR) spectroscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM), elemental analysis (CHN) and thermal analysis (TGA/DSC/DMA). The results have illustrated the controllable release of the anticancer agents.

Biography

Laleh Talavat is a PhD student in Polymer Chemistry and Graduate Research Assistant at Hacettepe University. She won awards for BAP projects, chemical affinity profiles of certain effectively used anti-cancer drugs in molecular imprinting and controlled release systems.

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Preparation and characterization of magnetic molecular imprinted 5-fluorouracil polymer nanoparticles based on algorithmic calculation (I)

Laleh Talavat and **Ali Güner**
Hacettepe University, Turkey

In targeted drug delivery, novel molecular imprinted monomers@Fe_3O_4@vinyl functional @5-fluorouracil which are prepared based on chemical affinity profiles (Hansen method) are utilized. The interaction dynamics between drug-monomer-solvent are essential in the algorithmic description for the calculation of the molecular imprinting (MIP) and the controlled drug release (CDR) components. In other words, cohesive energy density of components (CED)/resolution parameters, sub-parameters (δd, δp, δh) and sub-parameter combinations (δa, δv) are the basic nature of the interest profile. High chemical affinity create some difficulties in releasing controllably, however, low chemical affinity may lead to the uncontrollable and immediate releasement. According to the theoretical calculations, 4-vinylpyridine and acrylic acid were selected as desirable monomers for MIP synthesis. The synthesized MIP is utilized as a carrier for anticancer agent (5-fluorouracil) in simulated body fluid (SBF). To be detachable and transferable in body, the polymers were imprinted on the magnetic Fe_3O_4 nanoparticles (NPs) and characterized by infrared (FTIR) spectroscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM), elemental analysis (CHN) and thermal analysis (TGA/DSC/DMA). The results have shown the controllable releasement of anticancer agents.

Biography

Laleh Talavat is a PhD student in Polymer Chemistry and Graduate Research Assistant at Hacettepe University. She won awards for BAP projects, chemical affinity profiles of certain effectively used anti-cancer drugs in molecular imprinting and controlled release systems.

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Notes:

M Marchelek et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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The new 3D Bi_yX_z_TiO_2@$SrTiO_3$ composite structure in photocatalytic degradation process

M Marchelek, E Grabowska and **A Zaleska Medynska**
University of Gdansk, Poland

Semiconductor-based photocatalysts have attracted increasing interests due to their potential applications in solar energy conversion, hydrogen evolution and photo degradation of organic pollutants. One of the promising approaches is combining some semiconductors to form composites which can improve the efficiency of a photocatalytic system because of novel or enhanced properties that do not exist in individual components. Recently, increasing attention has been paid to the hollow structured materials because of their potential applications for adsorbents, catalysis, drug delivery or even micro reactors. In recent years, bismuth compounds are a promising candidates for visible-light-driven photocatalytic to which increasing attention has been paid. Due to narrow band gap and layered structure, bismuth-containing materials have shown admirable photocatalytic properties under visible light. The characteristics give an opportunity to combine bismuth-containing materials with different semiconductors and create third generation novel composites. The new third generation materials based on Bi_yX_z_TiO_2@$SrTiO_3$ structure (where Bi_yX_z: Bi_2MoO_6, Bi_2WO_6, $BiVO_4$, BiOI) could exhibit higher photocatalytic activity under UV and visible light. Heterogeneous photocatalysis with applying 3D microstructures is really attractive because of low density and (in comparison with other photocatalysts) can be simply separated by filtering without using of centrifugation method. Already described in literature, nanocomposites Bi_yX_z/TiO_2 exhibit enhanced activities in photocatalytic degradation of pollutants under visible light illumination, which can be assigned to the optical absorption ability of Bi_yX_z/TiO_2 nanocomposites in higher wavelength region. The photocatalysts activated by low powered and low cost irradiation sources (such as LEDs or black fluorescent UV lamps) can be used in air and water purification systems.

Biography

M Marchelek is a PhD student and has her expertise in “Nanomaterial synthesis, investigation of photocatalytic activity of semiconductors and characterization of photoactive powders”. Her evaluation of composites structures cerates new possibilities to increase photocatalytic activity of photocatalysts during pollutants degradation processes in gaseous and aqueous phase. The conducted studies on new 3D semiconductor composites in micro scale gives an opportunity to project materials with unique structures and properties, which could be used in photocatalytic treatment system.

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Notes:

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Development of molecularly imprinted polymeric nanofibers by electrospinning and applications to pesticides adsorption

Roberta Mercorio, F Ruggieri, A A D'Archivio, D Di Camillo, L Lozzi, M A Maggi and **S Santucci**
University of Milan, Italy

Novel polystyrene-based molecularly imprinted polymer nanofibers were synthesized through the electrospinning technique. The molecularly imprinted polymers were prepared using a non-covalent approach and atrazine as template. For comparison, non-imprinted polymer nanofibers were also synthesized. The morphology of the synthesized nanofibers was characterized using scanning electron microscopy. The adsorption of pesticides, atrazine, atrazine desisopropyl, atraton, carboxin, linuron and chlorpyrifos was studied under equilibrium (batch) conditions. To describe the adsorption capability of the synthesized polymers, Langmuir and Freundlich models were used. The Freundlich model provided a better mathematical approximation of the sorption characteristic for polymers nanofibers. To evaluate the adsorption capacity in the presence of interference experiments on river water samples spiked with a mixture of six pesticides were also performed. The results obtained for the highest concentration levels investigated, show a greater amount of pesticide adsorbed on molecularly imprinted polymers and non-imprinted polymers compared to those obtained using commercial stationary phases used as reference.

Biography

Roberta Mercorio is pursuing her PhD in Epigenetics, Environmental and Public Health at University of Milan. Her PhD project focuses on "Environmental air pollution and the human exposure to particulate matter, a significant portion of air pollution". During completion of her master thesis, she worked with nanotechnologies, developing the first polymer used for the water decontamination by pesticides. In this period, she learned the nanotechnology methods; she designed and built the polymer namely imprinted polymer specific for the common pesticides.

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Notes:

Mohsen Motezaker et al., J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Atomistic–continuum coupled model for nonlinear analysis of double layer graphene sheets using hierarchical multi-scale simulation

Mohsen Motezaker and **A R Khoie**
Sharif University, Iran

Graphene sheet have attracted considerable attention since it was discovered in 2004. This has been because of its exceptional features. The mechanical and electrical properties of graphene have been perceived to be closely coupled with deformation morphologies. Therefore, alterations in these properties of graphene by controlling the deformation morphologies have been considered very important. In this study, a multi-scale hierarchical molecular mechanic (MM)–finite element (FE) coupling methods are proposed to illustrate the influence of strain on mechanical properties of double-layer graphene sheets (DLGS) in large deformation. The Airebo interatomic potential is employed to describe the interaction between bonded atoms in single layer graphene sheet (SLGS) and non-bonded atoms in graphene layers. Nonlinear elastic parameters of DLGS in large deformation under uniaxial and biaxial strains along armchair and zigzag directions are obtained by computing second-order derivative of strain energy density with respect to deformation criterions. To bridge between atomistic and continuum level, the mechanical characteristics are investigated by molecular mechanic (MM) calculations at the atomistic level and transferred to the continuum level directly by functions of strains. Furthermore, comparing the numerical results of the present multi-scale method with MM simulation results discloses the suggested technique produce promising results with acceptable amounts of error in large deformation. In order to capture quantities of strain energy density conforming to empirical potentials at atomistic scale, a rectangular computational cell with fixed boundary conditions is used as a representative volume element (RVE) of a DLGS. Elastic constants graphs are illustrated as a function of green strains. The elastic tensor components utilized in FEM analysis and results were compared with a full atomic model.

Biography

Mohsen Motezaker is pursuing his MSc in Structural Engineering at Sharif University of Technology, Iran. His MSc thesis entitled “Multi-scale simulation of carbon nanotubes using coupled atomistic-continuum modeling”. His research will propose a single layer graphene sheet as the primary substance of carbon nanotubes. This research is designed for the analysis of deformation effect of the graphene sheet on mechanical properties of CNTs in order to consider that as a curved shell. He has previously worked with Dr. Reza Kolahchi on “The nonlinear buckling response of embedded piezoelectric cylindrical shell” and “Buckling analysis and smart control of SLGS”. His research interest includes “Computational nano-mechanics and large deformation analysis”.

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Notes:

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e-Poster

Sergey Mikhailovich Afonin, J Nanomater Mol Nanotechnol 2017, 6:4 (Suppl)
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Structural-parametric model of electro-magneto-elastic actuator for nanotechnology

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For nanotechnology, nanoscience, nanobiology, power engineering, microelectronics, astronomy, antennas satellite telescopes and adaptive optics equipment is promising for use of mechatronics systems with electromechanical actuator based on electro-magneto-elasticity (piezoelectric, piezomagnetic, electrostriction, magnetostriction effects). Piezoelectric actuator (piezo actuator) – piezo mechanical device intended for actuation of mechanisms, systems or management based on the piezoelectric effect, converts electrical signals into mechanical movement or force. Piezo actuators are used in the majority of nano manipulators for scanning tunneling microscopes (STMs), scanning force microscopes (SFMs), and atomic force microscopes (AFMs). By solving the wave equation with allowance for the corresponding equation of the piezo effect, the boundary conditions on loaded working surfaces of piezo actuator, the strains along the coordinate axes, it is possible to construct a structural parametric model of the piezo actuator. Structural-parametric model, decision wave equation and matrix equations of electro magneto elastic actuator are obtained; its transfer functions are built. Effects of geometric and physical parameters of electro magneto elastic actuator and external load on its dynamic characteristics are determined. For calculation of mechatronics systems for nano-metric movements with electro-magneto-elastic actuator, the generalized parametric structural schematic diagram Figure 1 and the transfer functions of actuator are obtained. Static and dynamic characteristics of piezo actuator are determined. The generalized structural-parametric model of the electro-magneto-elastic actuator provides the determination of its transfer functions and use methods of automatic control theory in calculation of its static and dynamic characteristics for the electro-magneto-elastic actuator for nanotechnology and nanoscience. Using the solutions of the wave equation and matrix equation of the electro-magneto-elastic actuator and taking into account the features of the deformations along the coordinate axes, it is possible to construct the generalized structural-parametric model of the actuator and to describe its dynamic and static properties.

Biography

Sergey Mikhailovich Afonin is an Associate Professor in Department of Intellectual Technical Systems at National Research University of Electronic Technology (Moscow Institute of Electronic Technology MIET). He completed his Graduation in Electronic Technology at National Research University of Electronic Technology MIET and; PhD in Electronic Technology Engineering and Control Systems at National Research University of Electronic Technology MIET. He received academic title of Senior Researcher at MIET in 1991. He has published more than 200 scientific papers to professional publication.

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Accepted Abstracts

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Polyethylenimine-functionalized pyroxene nanoparticles embedded on diatomite for adsorptive removal of dye from textile wastewater in a fixed-bed column

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Providing clean and affordable water to meet the human needs is a big challenge in this century. Globally, the water supply for many industries struggles to keep up with the strong demand. This demand issue is exacerbated by industrialization, which led to water quality deterioration, forming polluted wastewater. Existence of treatment processes to overcome wastewater problems are not efficient and appropriate to maintaining the industrial effluent composition within the standard limits. Specifically, presence of dissolved organic compounds not properly eliminated during the wastewater treatment has a negative impact on human health and the environment. As a novel solution, nanotechnology holds great potential in water and wastewater treatment to improve water quality efficiently. Here, we introduce an innovative technique using environmentally friendly, multifunctional, and effective poly(ethylenimine)-functionalized pyroxene nanoparticles to provide an efficient removal of the dissolved total organic carbon from industrial wastewater in batch and continuous fixed-bed column studies under various conditions. Our study includes arrays of characterization techniques for the prepared nanoparticles and for diatomite (commonly used filter aid) before and after embedding it with the nanoparticles at a very low mass ratio (<5 wt%). Diatomite, on its own, has a very low adsorption capacity for the dissolved organic contaminants in field applications. Among these applications is the employment of diatomite with a rotary drum filter (RDF). Therefore, we embedded the nanoparticles to improve the performance of the diatomite employed with a rotary drum filter used for the removal of dissolved organic pollutants. This followed our bench scale adsorption experiment using a continuous fixed-bed column that is considered to be the best lab scale model for the rotary drum filter. The experimental results showed that, compared to using activated carbon and magnetic nanoparticles, the prepared nanoparticles were very effective in the removal of dissolved organic contaminants in batch and continuous fixed-bed column experiments. In continuous fixed-bed column experiments, the breakthrough behavior was described using a convection-axial dispersion model that had a good fit with the obtained experimental data. Interestingly, this innovative technique was successfully applied at Executive Mat Ltd, in Calgary in their rotary drum filter after optimizing some operational conditions.

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What do we know about nanomaterial properties that affect their toxicity?

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Safe-by-design (SbD) is not new, the method has been used for years by the industry to minimize the toxicity of products. The SbD concept is tuned towards timely identification of uncertainties and potential risks as well as timely measures to reduce or eliminate these uncertainties and risks during an innovation project. SbD is not a stand-alone concept: It is designed so that it can be seamlessly integrated into current industrially used innovation processes. In essence, designers and developers of new nanomaterials should include toxicological expertise in a very early stage, rather than waiting under risk assessment has to be performed prior to bringing a product to the market. More than a decade of research on the toxicological potential of nanomaterials will allow us now to give guidance with some general principles. For example, the aspect ratio of fibre like structures is very predictive for the development of mesothelioma (like the classical asbestos-induced cancer). Size, shape, solubility, number of particles that will be in contact with the biological system will all have their implications for the development of adverse health outcomes.

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Where inorganic meets organic in the glassy state: Hybrid glasses and dental cements

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While glasses are conventionally formed by quenching from the molten state, amorphization from the crystalline state, notably from zeolitic precursors offers an interesting alternative. Synchrotron radiation, neutron scattering and atomistic simulation have been instrumental in analyzing these novel processes. The role of THz vibrations in zeolitic collapse appears to play a significant role. Most recently the amorphization route has resulted in the development of glasses derived from metal organic framework materials, notably from zeolitic imidazolate frameworks. Organic-inorganic geometries also occur at glass-polymer interfaces in composites, such as glass ionomer cements, where aluminium at the surface of glass particles chelate with carboxyl groups from the surrounding polyacrylic acid. In each case, hybrid bridges dictate mechanical properties, which for cements, unexpectedly fluctuate with setting.

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Green synthesis of silver nanoparticles using Ocimum sanctum (tulsi) leaf extract and evaluation of their antimicrobial activities

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There is an increasing demand of silver nanoparticles due to their unique properties and applications in various fields such as medicine, catalysis, nano electronics, textile field, pollution and water treatment. Nano-silver strong antimicrobial activity is the major reason for the development of nano-silver containing products. The silver nanoparticles are synthesis by various chemical and physical methods. The major drawbacks of chemical and physical methods are that the synthesis processes are expensive and many toxic chemicals are used. To overcome these problems green nanotechnology comes to play very crucial role for synthesis of silver nanoparticles. Use of various plants for synthesis of biogenic silver nanoparticles referred as green nanotechnology. In the present study, we reported the green synthesis of silver nanoparticles by using *Ocimum sanctum* (tulsi) leaf extract in the exposure of direct sunlight without using any chemical additive. The *Ocimum sanctum* (tulsi) leaf extract act as reducing agent as well as capping agent. Developed Ag nanoparticles were duly characterized and tested for their antibacterial activity. The formation of silver nanoparticles was observed by the change of color from colorless to brown by the addition of Ocimum sanctum (Tulsi). UV-Vis absorption spectroscopy was used to monitor the quantitative formation of silver nanoparticles. The mean particle diameter of silver nanoparticles was calculated from the XRD pattern, according to the line width of the plane and the refraction peak, using Scherrer's equation. FTIR spectroscopy confirmed the presence of chemical bonding as the stabilizing agent surrounding the Ag NPs. Antimicrobial activity of the silver bio-nanoparticles was performed by a well diffusion method. Scanning electron microscopy (SEM) & EDX analysis, the EDX spectrum of the solution containing silver nanoparticles, confirmed the presence of an elemental silver signal without any peaks of impurities.

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Formation and control of band-gap in graphene by using low energy alkali metal ions

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Despite its superb electronic properties over other materials, graphene still remains as a tantalizing candidate to be actively utilized in electronic applications mainly because of its linear gapless band spectrum. Since the massless Dirac fermions in graphene showing ballistic charge transport even at room temperature are ideal charge carriers for fast circuit devices. Extensive research efforts have been made to open a tunable band gap in graphene with several different schemes. In this talk, we introduce a new scheme of forming and fine-tuning a band gap for a range suitable for most applications by using slow alkali metal ions mostly focused on Cs+ ions. We also demonstrate the on-off switching capability by controlling the size and mid-gap energy (or Dirac point) of the band gap independently by adding other neutral atoms. Our density-functional theory calculations for the π-band suggest that the sublattice asymmetry enhanced by the doped ions drives the behavior of the ion-induced band gap in graphene. This tunable alkali metal ion-induced band gap in graphene illustrates its potential application in future graphene-based nano-electronics.

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Lessons from nature for designing artificial light-harvester

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The structure of photosynthetic light-harvester is examined from classical electrodynamics point of view. We can explain from our model the reason of the modular design of nature, the cross-section of the light harvester must be elliptical instead of circular, the shape must be cylinder instead of a ball, the function of the notch at the light-harvester, the non-heme iron at the reaction center, the chlorophylls must be dielectric instead of conductor, a mechanism to prevent damages from excess sunlight, which consists of the physical requirement. We learnt from nature for designing artificial light-harvester.

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Enhanced treatment of chloronitrobenzenes wastewater in coupled bio-electrode-anaerobic process via nano-magnetite addition

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Because of direct electron transfer process playing a key role in anaerobic reduction of persistent toxic organic compounds such as 2,4-dichloro-nitrobenzene (2,4-DClNB), a novel nano-magnetite enhanced bio-electrode-UASB reactor was established in this study, and the removal performance and reductive de-chlorination mechanism were investigated. Results showed that with the influent 2,4-DClNB load rates increasing from 25 g m^{-3} d^{-1} to 200 g m^{-3} d^{-1}, the COD, target pollutant removal and pH in combined system were stable relatively, and the removal efficiencies were up to 97% and 100%, respectively. The electrode biofilm was analyzed by SEM, and results showed that both the anode and cathode biofilms were covered with nano-magnetite. Inside the biofilms, there also existed nano-magnetite. This finding could further confirm that nano-magnetite plays an important role in enchanting extracellular electron transfer (EET) and pollutants removal in magnetite enhanced bio-electrode-UASB reactor.

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New nanomaterials for energy conversion and environmental processes requires high performance catalysts

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Future catalytic processes in the energy conversion and environmental fields will place ever-increasing demands on catalyst performance in terms of activity, selectivity, durability and cost. Several recent examples promise the required solution. Specially crafted nanorod-based catalysts for supporting nano metals such as gold and ruthenium have been used in reactions such as CO removal by oxidation or methanation respectively and have potential applications in exhaust emission and hydrogen production. These solids, in the case of gold display extremely and unusually high thermo stability. High activity modified nickel catalysts for methane decomposition for low carban energy conversion via hydrogen and carban fuel cells have been described. Microwave treatment and plasma treatments are both potentially useful as seen for iron-based catalysts used for the conversion of syngas (from fossil or renewable fuel sources) to liquid hydrocarbons. Finally, some high activity catalysts for the photo conversion of biomass-derived materials to hydrogen have been based on nano metals, nano titania-graphene composites which display heterojunction-based assistance in reducing the rate of electron-hole recombination, leading to high hydrogen production rates.

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Light shielding material for gamma- ray made from polyacrylamide Nanocomposites

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The main goal of this article is to design a light shielding materials for the gamma-rays on the base of nanocomposites. The nanocomposite used in this research is a combination of ZnO nanoparticles in polyacrylamide matrix. The Nanoparticles prepared in three weight percentage groups and the linear and mass attenuation coefficient measured for the two source: 137Cs, 60Co.Concludingly, the results depict equivalent mass attenuation for nanocomposite with density of 1g/cm3 comparing with the bulk of ZnO with density of 5/6 g/cm3, and it shows the influence of nanoparticles on the attenuation of gamma ray.

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Metamaterials and their applications

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Stone Age, Copper Age, Bronze Age, Iron Age were names of the eras of mankind after materials. Is the metamaterial (or 3D-printing) age next? Many people are working on meta-objects. Is there a high probability that in the close future, the 3D printing would overcome all other fabricational process? Recent advances in three-dimensional printing on the micro- and macro-scale help them to succeed. In this talk, we will show how one can built metamaterials or to control different physical properties in mechanics, magneto-transport and thermal expansion. The main key of the talk will be to show that using a single component material; one can realize any effective properties in the required field and even sometimes go beyond the standard bounds. In the figure 1, we show few examples of metamaterials realized by DLW (direct laser writing) which properties are obtained from the geometrical structure.

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Gold nanoparticles for non-invasive in vivo cell tracking with CT imaging

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Cell-based therapy is the transplantation of living cells for the treatment of diseases and injuries. Such therapy offers a promising solution for the treatment of various pathologies that conventional medicine cannot cure effectively, thus encouraging future medical breakthroughs. For instance, cancer-fighting T cells may be injected in the course of cancer immunotherapy, and stem cells may treat neurodegenerative diseases, heart disease, muscular dystrophy and diabetes. A major obstacle in the advancement and implementation of cell therapy is the challenge of non-invasively tracking transplanted cells in the body. *In vivo* cell tracking could elucidate essential knowledge regarding mechanisms underlying the success or failure of therapy. An optimal solution for the challenge of cell tracking does not yet exist hence there is need for an accurate imaging technique. We developed a novel methodology for longitudinal and quantitative *in vivo* cell tracking, based on the combination of CT as an imaging modality and gold nanoparticles as labeling agents. We were able to show that uniting the superior visualization abilities of classical CT with state-of-the-art nanotechnology is the key for high-resolution cell tracking. In the future, this technology has the potential to be applied clinically and to serve as an early warning system for patients after cell transplantation.

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Synthesis and characterization of epoxy containing hydrogel membrane adsorption system and application to reducing of pollution in chrome tanning and dyeing process

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Trivalent chromium is an important pollutant by a variety of industrial wastewaters like textile, leather tanning and metal industries. Especially the releasing non bounding Cr III ions in water can be reduced to harmful Cr VI ions by the environmental factors (UV, temperature, etc.). So, day by day trivalent chromium removal from waters gains importance. In advance processes such as ozonation, electrochemical and ultrasonic techniques, membrane filtration, photo-catalysis and adsorption have been used for the heavy metal removal. Nowadays, adsorption techniques by polymers have been popular studies because of simplicity of design, ease of usability and effectiveness. However hydrogel membrane systems, which are a separation technique, can adsorb various chemicals with their functional groups and can retain aqueous solutions of up to hundreds of times their own weight. In this presented work, p(HEMA-GMA) poly (hydroxyl-ethyl methacrylate-co-glycidyl methacrylate) hydrogel membrane was produced by UV photo polymerization and the synthesized membrane was coupled with iminodiacetic acid (IDA) in order to chelate the Cr III ions at different concentrations of aqueous Cr III solution (1300-13000 ppm) at pH 4.3 (adjusted with HCl and NaOH), which was the optimum pH for Cr III chelate formation, at 25oC and the Cr III adsorption capacity of p(HEMA-GMA)-IDA membrane was determined using a UV/Vis spectrophotometer at a wavelength of 601 nm. Also characterization of p (HEMA-GMA)-IDA membrane was researched by SEM imagines, ATR-FTIR, Langmuir and Freundlich adsorption isotherms. Finally the results showed that p (HEMA-GMA)-IDA membranes was calculated as 361.21 mg/g (6.95 mmol/g) Cr III ions. So p (HEMA-GMA)- IDA membrane can effectively be used for the removal of trivalent chromium from aqueous solutions. Then p (HEMA-GMA)-IDA-Cr(III) membrane was used for removing acid dye in the dying process effluents in laboratory conditions.

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Magnetic, microstructure and antimicrobial investigation of Fe3O4/ZnO nano-powder and film synthesized by sol/gel and solvent evaporation in a vacuum methods

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Different coatings in various ways on magnetite nanoparticles increase their application such as the photocatalyst. In this research, Fe_3O_4 nanoparticles were covered in two different ways, sol/gel (sample S_1) and solvent evaporation in a vacuum rotary device (sample S_2). According to XRD patterns, ZnO peaks in the sample S_2 to S_1 due to film and layers formation on magnetite nano particle has increased. While in the sample S_1 core/shell structure has been formed. These results were consistent with FE/SEM and TEM (core/shell structure of S_1) images. Results of magnetic properties by VSM showed, on one side, all three samples (magnetite M, S_1 and S_2) have superparamagnetic properties, on the other side; this parameter has a direct relationship with coating process. The magnetic properties of sample S_2 to S_1 has decreased due to more dead layers of ZnO with different thickness. The antimicrobial experiments were carried out with 10^7 CFU/mL gram negative bacteria *Escherichia coli* and gram positive *bacteria Staphylococcus* aureus strains were propagated on tryptic soy agar plates. Then 20 µl of different concentration of nanoparticles suspension from 2.5-5-10-20-40-60-80 to100 mg/ml were placed on plates and incubated at 37°C for 24 h. According to the inhibition zone around film specimens, antimicrobial activity increases with increasing of the Fe_3O_4/ZnO nano particle concentration in sample S_2 to S_1. And it's more effective to staph than *E. coli* bacteria inhibition.

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Application of the BSM-SG atomic models for analysis of nuclear transmutations

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According to the Basic Structures of Matter -Supergravitation Unified Theory (BSM-SG), the near field of atomic nuclei exhibits a space micro-curvature. This effect distorts the space-time parameters of the near field, which is one of the reasons that Quantum mechanical models work only with energy levels. The re-examination of scattering experiments from this point of view reveals a complex three-dimensional nuclear structure different from the quantum mechanical models of atoms based on the Bohr atomic model. BSM-SG atomic models are one of major derivations of the BSM-SG theory. Protons and neutrons are not point-like; the atomic nuclei are with a much larger overall size, so the Coulomb barrier is not so strong. This explains the observed nuclear transmutations at accessible temperatures. The pattern of periodic table carries a strong signature of the spatial arrangement of protons and neutrons in the atomic nuclei. The nuclear spin and nuclear magnetic resonance are also identifiable features of the nuclear configuration, so they obtain a classical explanation. The BSM-SG models fit well when modeling of molecules in structural chemistry. They also provide a new opportunity for analysis and prediction of some nuclear transmutations in the field of LENR. This issue is presented in the author's book "Structural Physics of Nuclear Fusion". The book describes a new method for theoretical estimation of the binding nuclear energy based on the derived nuclear dimensions of hadrons and derived strong force parameters. This provides considerations for a proper selection of the isotopes for LENR with a lack or minimal radioactive waste.

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Assessment of mechanism of nanoparticles synthesized from Centella asiatica Linn. on paracetamol induced immune modulatory changes in in vitro and in vivo systems

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Stress induced due to Inflammation and reactive oxygen species impose toxicity to different kinds of cells. Human body is also prone to develop toxicity due to the exposure to several toxic substances. The study was aimed to assess the toxicity induced by paracetamol on brain, spleen and liver and the protective role of *Centella asiatica* nanoparticles (CANP) against this damage (toxicity). Oxidative stress (reactive oxygen species) and nitrosative stress (reactive nitrogen species) were also studied to determine the free radical production. Interestingly, paracetamol caused severe damage to the brain and liver which was evident from deleterious alterations in various parameters. The study included synthesis and characterization of carbohydrate encapsulated CANP by using XRD diffraction patterns, transmission electron microscope (TEM) and dynamic light scattering (DLS), zeta potential, DSC, TGA, DTA, gel permeation chromatography analysis and assessment of inflammatory mechanism by evaluating the expression pattern of immune modulatory cytokine mediators using real time PCR. Paracetamol treatment (1 mM) resulted in increased mRNA expression of cytokines like tumor necrosis factor-beta, interleukin 6, interleukin 1, interferon gamma, mitogen-activated protein kinase gene-14 and decreased interleukin 10 mRNA expression. These changes were normalized by administration of different concentrations (or doses) of CANP. Flow cytometry analysis using Annexin V apoptosis assay kit will be carried out using isolated splenocytes to assess apoptosis and necrosis. This study is first of its kind to assess inflammatory toxicity induced by paracetamol. Consequently, the study depicts that paracetamol induced inflammatory toxicity could be attenuated by CANP treatment as evident by the decreased levels of the pro-inflammatory cytokines, immune reactions and free radical production.

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Excellent performance of photo detector based on $CsPbBr_3$ films with ZnO nanoparticles decoration

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Hybrid perovskites are considered to be promising candidates for the optoelectronic devices because they have the advantages of large absorption coefficients, ultrafast charge generation, and photon-generated carries with long lifetime and high mobility. These materials can be, however, thermally unstable, which is related to the organic constituents. The stability problem, fortunately, can be solved by replacing the organic cation $CH_3NH_3^+$ with the inorganic cation Cs^+, which results in all-inorganic perovskites ($CsPbX_3$, X=Cl, Br, I) with significantly enhanced thermal stability. The particularly stable $CsPbBr_3$ has been widely applied in solar cells, laser and LEDs. In addition, $CsPbBr_3$ has also been investigated for its remarkable optoelectronic properties including the balanced electron and hole mobility-lifetime product, high electron mobility and small exciton binding energy. The remarkable properties of CsPbBr3 evoke our interest in developing novel photo detectors by using this material as the light absorber. In this paper, we demonstrate enhanced performance of solution-processed photo detectors composed of all-inorganic $CsPbBr_3$ perovskite films with ZnO nanoparticles (NPs) decoration. Introducing ZnO NPs into $CsPbBr_3$ precursor solution results in a film with more uniformly and compactly distributed crystalline grains. ZnO NPs can also promote the transport of photon-generated carriers from the central $CsPbBr_3$ absorption layer to the lateral electrodes. Compared to the photo detectors without ZnO decoration, the fabricated all-inorganic $CsPbBr_3$:ZnO photo detectors achieved comparable rise time of 0.409 s, fall time of 19.72 ms and on/off ratio of 12.86 without additional power source.

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