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Polymer Sciences

Proceedings of

Annual Meeting on

Biopolymers and Drug Delivery Systems

October 12-13, 2017 Osaka, Japan



Biopolymers Meeting 2017

hosting Organization:
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Scientific Program

Scientific Program

Registrations
08:30-09:30

Meetings International

Opening Ceremony
09:30-09:55

Day 1 October 12, 2017

Hall

Keynote Forum

09:55-10:00 Introduction

10:00-10:40 Title: Solid-state characterization and stability tracking of drug-loaded micro- and nanofibrous delivery systems
Romana Zelko, Semmelweis University, Hungary

10:40-11:20 Title: Hot melt extrusion: An emerging drug delivery technology
Rashid Mahmood, Surge Laboratories Private Limited, Pakistan

Group Photo

Networking and Refreshments Break: 11:20-11:40

Sessions:
Biopolymers | Nanotechnology in Drug Delivery | Polymer material Science & Engineering | Polymer Nanotechnology | Bio Renewable Biopolymers | Biodegradable Polymers

Session Introduction

Session Chair: Romana Zelko, Semmelweis University, Hungary

11:40-12:10 Title: Concentration regimes of biopolymers xanthan, tara and clairana, comparing dynamic light scattering and distribution of relaxation time
Patrícia Diaz de Oliveria, Federal University of Pelotas, Brazil

12:10-12:40 Title: Modeling of phase behaviors for hydrogen bonding polymer solution using pc-saft equation of state
Bong-Seop Lee, Kuyngnam University, Republic of Korea

12:40-13:10 Title: Influence of surface charge density and nacl concentration on the intrinsic viscosity of cellulose nanocrystal suspensions
Siqun Wang, University of Tennessee, USA

Lunch Break: 13:10-14:10

14:10-14:40 Title: Self-assembled tripeptide fibers as prebiotic RNA binders
Tony Z Jia, Tokyo Institute of Technology, Japan

14:40-15:10 Title: Thermogels as an injectable 3D scaffold
Byeongmoon Jeong, Ewha Womans University, Republic of Korea

15:10-15:40 Title: 13C labeling gives insight into contribution of PHB precursors in Synechocystis sp. PCC 6803
Vaishali Dutt, ICGEB, India

15:40:16:10 Title: Nanoformulations for Hsp90 Inhibitors for Cancer Therapy
Ankit K Rochani, Toyo University, Japan

Networking and Refreshments Break: 16:10-16:30

Panel Discussions

Day 2 October 13, 2017

Hall

Sessions:
Polymeric Biomaterials | Formulation Aspects | Bioplastics | Peptides and Protein Drug Delivery | Bio Renewable Biopolymers | Theranostics

Session Introduction

Session Chair: Jongshin Park ,Seoul University, South Korea

10:00-10:30	**Title: Copper based multifunctional nanocrystals for a pragmatic approach towards cancer theranostics** **M Sheikh Mohamed,** Toyo University, Japan
10:30-11:00	**Title: Cationic Porphyrin Induced B-Z Transition of AT-Rich DNA** **Yun Jung Jang,** Yeungnam University, Republic of Korea

Networking and Refreshments Break: 11:00-11:20

11:20-11:50	**Title: Preparation of intelligence barrier films based on low density poly ethylene and evaluation of its properties** **B Bahari Aban,** Islamic Azad University, Iran
11:50-12:20	**Title: Response surface method optimization of rice straw-liquefaction using crude glycerol for rigid polyurethane foam application** **Rosal Jane Ruda,** Mindanao State University-IIT, Philippines
12:20-12:50	**Title: Effects of rice straw-based polyol on the thermophysical properties of rigid polyurethane foam** **Kriztine Magadan-Icalina,** Mindanao State University-IIT, Philippines

Poster Presentations 11:20-13:00

BPDD001	**Title: The anticancer activity of the combination therapy of gemcitabine and doxorubicin encapsulated in a nanoemulsion** **Faiza Abdu,** King Abdulaziz University, KSA
BPDD002	**Tittle: Production of bioplastic by brazilian bacterium ralstonia solanacearum** **Matheus Marques Torres,** Federal University of Pelotas (UFPel), Brazil
BPDD003	**Title: Drug discovery of FLT-3/c-KIT inhibitors as anticancer drugs** **Min-Hsien Wang,** National Health Research Institutes (NHRI), Taiwan
BPDD004	**Title: Novel and validated spectrophotometric estimation of Indomethacin in bulk and solid dosage formulation using mixed hydrotropic solubilisation technique** **Nisar Ahmad Khan,** University of Kashmir, India
BPDD005	**Title: Combined use of zoledronic acid augments ursolic acid-induced apoptosis in human osteosarcoma cells through enhanced oxidative stress and autophagy** **Chia-Chieh Wu,** National Chung Hsing University, Taiwan
BPDD006	**Title: Preparation and evaluation of gastro-retentive floating tablets of bromhexine hydrochloride using thermoplastic granulation method** **Kelvin Bucktowar,** T. John College of Pharmacy, India
BPDD007	**Title: Preparation of hydrogels using various starch aldehydes** **Jungmin Lee,** Seoul National University, Republic of Korea
BPDD008	**Title: Effect of the Grafting Reaction of Aluminum Nitride on the Multi-Walled Carbon Nanotubes on the Thermal Properties of the Poly(phenylene sulfide) Composites** **Min Goo Jee,** Seoul National University, Republic of Korea
BPDD009	**Title: Preparation of carboxymethyl cellulose based-hydrogels using polycarboxylic acids** **Dahyun Kim,** Seoul National University, Republic of Korea
BPDD010	**Title: Preparation of polysaccharide hydrogels with different process methods** **Jihyun Yeo,** Seoul National University, Republic of Korea
BPDD011	**Preparation and characteristics of PPS composites using glass fiber and reduced graphene oxide** **Juhee Byeon,** Seoul National University, Republic of Korea
BPDD012	**Title: Raman analysis and morphological studies of lignin-based carbon / sepiolite hybrid materials prepared by mechanical methods** **Hyun-gyoo Roh,** Seoul National University, Republic of Korea
BPDD013	**Title: Efficiency of Brazilian xanthan encapsulation and associations in the microencapsulation of probiotics (*Lactobacillus acidophillus*)** **Patrícia Diaz de Oliveria,** Federal University of Pelotas, Brazil

Award and Closing Ceremony

Lunch Break: 13:00-14:00

B2B Meetings & Panel Discussions

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Aquaculture & Veterinary Science Journal	
Journal of FisheriesSciences.com	1307-234X
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Chemical Informatics	2470-6973
Der Chemica Sinica	0976-8505
Herbal Medicine: Open Access	2472-0151
Insights in Analytical Electrochemistry	2470-9867
Journal of Organic & Inorganic Chemistry	2472-1123
Structural Chemistry & Crystallography Communication	2470-9905
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British Biomedical Bulletin	2347-5447
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Gynecology & Obstetrics Case report	2471-8165
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Journal of Nuclear Energy Science & Power Generation Technology, Hybrid Open Access	2325-9809

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Journal of Proteomics & Enzymology, Hybrid Open Access	2470-1289

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Nanomaterials & Molecular Nanotechnology	2324-8777
Nanomedicine & Nanotechnology	2157-7439
Plastic & Polymer Sciences	-
Powder Metallurgy & Mining	2168-9806
Research & Reviews: Journal of Material Sciences	2321-6212

Mathematics

Applied & Computational Mathematics	2168-9679
Biometrics & Biostatistics	2155-6180
Generalized Lie Theory and Applications	1736-4337
Physical Mathematics	2090-0902
Research & Reviews: Journal of Statistics and Mathematical Sciences	-

Medical

Abnormal and Behavioural Psychology	-
Acta Psychopathologica	-
Acta Rheumatologica	-
Addictive Behaviors , Therapy & Rehabilitation	2324-9005
Adenocarcinoma	-
Advances in Cancer Prevention	-
Advances in Genetic Engineering & Biotechnology	-
Advances in Weight Loss Management & Medical Devices	-
Aerobics & Fitness	-
Aesthetic & Reconstructive Surgery	-
Aids & Clinical Research	2155-6113
Air and Water Borne Diseases	2167-7719
Alternative & Integrative Medicine	2327-5162
Analgesia & Resuscitation : Current Research	2324-903X
Anaplastology	2161-1173
Anatomy & Physiology: Current Research	2161-0940
Andrology & Gynecology: Current Research	2327-4360
Andrology	2167-0250
Angiology: Open Access	2329-9495
Annals of Behavioural Science	-
Applied and Rehabilitation Psychology: Open Access	-
Archives in Cancer Research	2254-6081
Archives of Medicine	1989-5216
Archives of Surgical Oncology	-
Archivos De Medicina	1698-9465
Arthritis	2167-7921
Asthma and Bronchitis	-
Athletic Enhancement	2324-9080
Autacoids & Hormones	2161-0479
Biology and Medicine	0974-8369
Biomedical Engineering & Medical Devices	-
Biomedical Sciences	2254-609X
Bioterrorism & Biodefense	2157-2526
Blood	-
Blood & Lymph	2165-7831
Blood Disorders & Transfusion	2155-9864
Blood Pressure: Open Access	-
Bone Marrow Research	2329-8820
Bone Reports & Recommendations	-
Brain Tumors	-
Breast Cancer: Current Research	-
Cancer Biomarkers	-
Cancer Clinical Trials	-
Cancer Diagnosis	-
Cancer Medicine & Anticancer Drugs	-
Cancer Science & Therapy	1948-5956
Cancer Surgery	-
Carcinogenesis & Mutagenesis	2157-2518
Cardiovascular Diseases & Diagnosis	2329-9517
Cardiovascular Pathology: Open Access	-
Celiac Disease: Open Access	-
Cervical Cancer: Open Access	-
Chemotherapy	2167-7700
Chest Diseases	-
Childhood & Developmental Disorders	-
Childhood Obesity	-
Chronic Obstructive Pulmonary Disease: Open Access	-
Colorectal Cancer: Open Access	-
Communication Disorders, Deaf Studies & Hearing Aids	2375-4427
Community Medicine & Health Education	2161-0711
Complex Diseases and Treatment	-
Contraceptive Studies	-
Critical Care Obstetrics & Gynecology	-
Current Trends in Gynecologic Oncology	-
Dental Health: Current Research	-
Dental Implants and Dentures: Open Access	-
Dentistry	2161-1122
Depression and Anxiety	2167-1044
Dermatology Case Reports	-
Diabetes & Metabolism	2155-6156
Diabetes Medication and Care	-
Diabetic Complications and Medicine	-
Drug Abuse	-
Emergency Medicine	2165-7548
Endocrinology & Diabetes Research	-
Endocrinology & Metabolic Syndrome	2161-1017
Epidemiology: Open Access	2161-1165
Evidence based Medicine and Practice	-
Family Medicine & Medical Science Research	2327-4972
Forensic Biomechanics	2090-2697
Forensic Medicine	-

Forensic Nursing: Open Access	-
Forensic Odontology	-
Forensic Psychology	-
Forensic Research	2157-7145
Gastrointestinal & Digestive System	2161-069x
Gastrointestinal Cancer and Stromal Tumors	-
General Medicine	2327-5146
General Practice	2329-9126
Genetic Disorders & Genetic Reports	2327-5790
Genital System & Disorders	2325-9728
Geriatric Psychiatry	-
Gerontology & Geriatric Research	2167-7182
Gynecology & Obstetrics	2161-0932
Gynecology & Obstetrics- Case Report	-
Haematology & Thromboembolic Diseases	2329-8790
Hair: Therapy & Transplantation	2167-0951
Head and Neck Cancer Research	-
Health & Medical Economics	-
Health Care Communications	-
Health Economics & Outcome Research: Open Access	-
Health Education Research & Development (Biosafety & Health Education: Open Access-2332-0893)	-
Health Systems and Policy Research	2254-9137
Heart Transplant and Surgery	-
Heavy Metal & Chelation Therapy	-
Hepatology and Gastrointestinal Disorders	-
Hospital & Medical Management	-
Hypertension- Open Access	2167-1095
Hypo & Hyperglycemia	2327-4700
Imaging and Interventional Radiology	-
Medical Implants & Surgery	-
Informatics and Data Mining	-
Insights in Biomedicine	-
Insights in Medical Physics	-
Integrative Oncology	2329-6771
Internal Medicine	2165-8048
International Journal of Clinical & Medical Imaging	2376-0249
International Journal of Collaborative Research on Internal Medicine & Public Health	-
International Journal of Emergency Mental Health and Human Resilience	1522-4821
International Journal of Mental Health & Psychiatry	2327-4654
International Journal of Pediatric Neurosciences	-
International Journal of Physical Medicine & Rehabilitation	2329-9096
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

Meetings International



BIOPOLYMERS MEETING 2017

SUPPORTING JOURNALS

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Supporting Journals

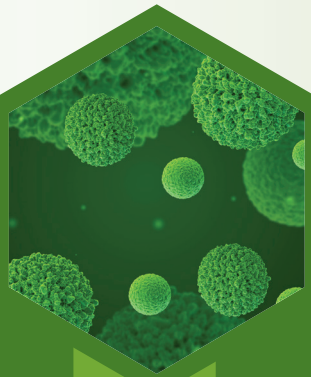
Polymer Sciences
www.polymerscience.imedpub.com

Research & Reviews: Journal of Material Sciences
www.rroij.com/material-sciences.php

International Journal of Innovative Research in Science, Engineering & Technology
www.rroij.com/international-journal-of-innovative-research-in-science-engineering-and-technology.php

American Journal of Advanced Drug Delivery
www.imedpub.com/advanced-drug-delivery





Meetings International



BIOPOLYMERS MEETING 2017

UPCOMING CONFERENCES

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Global Proteomics Conference
Oct 25-26, 2017 Dubai, UAE

Global Experts Meeting on
Gastroenterology
Nov 13-14, 2017 Melbourne, Australia

Global Experts Meeting on
Diabetes and Endocrinology
Nov 13-14, 2017 Melbourne, Australia

Global Experts Meeting on
Neurological Disorders and Stroke
Nov 16-17, 2017 Melbourne, Australia

World Cancer Meeting
Nov 16-17, 2017 Melbourne, Australia

Global Experts Meeting on
Toxicology
Nov 13-14, 2017 Singapore

Annual Cardiology Congress
Nov 13-14, 2017 Singapore

International meeting on
Advanced Nanomaterials and Nanotechnology
Nov 13-14, 2017 Singapore

International Meeting on
Petroleum Engineering
Nov 13-14, 2017 Singapore

International Conference and Exhibition on
Nanotechnology and Nanomedicine
Nov 23-24, 2017 Dubai, UAE

Annual Meeting on
Pharmacology
Nov 23-24, 2017 Dubai, UAE

Global Meeting on
Molecular & Cancer Biomarkers
Nov 23-24, 2017 Dubai, UAE

International Meeting on
Aquaculture & Fisheries
Dec 06-07, 2017 Dubai, UAE

Global Experts Meeting on
Sexually Transmitted Diseases
Dec 06-07, 2017 Dubai, UAE

Global Chemical and Biochemical Engineering Meeting
Dec 06-07, 2017 Dubai, UAE

International Conference on
Eye and Vision
Dec 06-07, 2017 Dubai, UAE

Global Experts Meeting
Reproductive Health
Dec 11-12, 2017 Dubai, UAE

Global Meeting on
Materials Science & Nanotechnology
Dec 11-12, 2017 Dubai, UAE

International Meeting on
Nutraceuticals
March 19-20, 2018 Singapore

Global Diet and Nutrition Meeting
March 19-20, 2018 Singapore

2nd International Meeting on
Nursing Research and Evidence Based Practice
March 19-20, 2018 Singapore

World Congress on
Herbal and Chinese Medicine
March 26-27, 2018 Bali, Indonesia

Annual Meeting on
Green Chemistry and Green Energy
May 07-08, 2018 Tokyo, Japan

Global Experts Meeting on
Dental Research
May 07-08, 2018 Tokyo, Japan

International Meeting on
Medicinal Plants and Natural Products Research
May 07-08, 2018 Tokyo, Japan

Global Experts Meeting on
Hospital and Clinical Pharmacy
July 30-31, 2018 Melbourne, Australia

Global Experts Meeting on
Public Health and Nutrition
July 30-31, 2018 Melbourne, Australia

Global Experts Meeting on
Clinical Research and Clinical Trials
August 13-14, 2018 Tokyo, Japan

Global Experts Meeting on
Case Reports
August 13-14, 2018 Tokyo, Japan

Analtical and Bioanalytical Techniques Congress
August 13-14, 2018 Tokyo, Japan



BIOPOLYMERS MEETING 2017

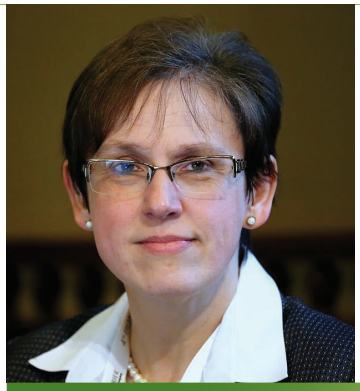
DAY 1
KEYNOTE FORUM

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Romana Zelko, Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-004



Romana Zelko

Semmelweis University, Hungary

Biopolymers Meeting 2017

Solid-state characterization and stability tracking of drug-loaded micro- and nanofibrous delivery systems

The formulation of novel nanofiber-based drug delivery systems focusing on specific delivery purposes has been investigated worldwide. The favorable physicochemical properties (high specific-area-to-volume ratio, high porosity and the possibility of controlling the crystalline-amorphous phase transitions of the loaded drugs), make them a desirable formulation and pathway to satisfy the needs of modern pharmaceutical development. In regenerative medicine, a peculiar importance has been attributed to the structure of nanofibers because microarchitecture very similar to that of the extracellular matrix can be achieved. Fibrous delivery systems can facilitate drug release and increase solubility of small molecules. Moreover, they are capable for controlled drug delivery over time for local or systemic drug administration. The solubility of the polymer, the fiber diameter and the fiber structure are the primary parameters affecting drug release. In the case of small molecules, developments focus mostly on overcoming the unfavorable physicochemical feature of the active agents. However, the physical and chemical stability of these systems has not yet been thoroughly investigated and thus poses a challenge in their development. The presentation intends to provide a comprehensive overview of non-invasive spectroscopic methods applied for the characterization of fibrous delivery systems, including a sensitive nuclear technique (Positron Annihilation Lifetime Spectroscopy), which enabled effective means for the detection and the prediction of possible supramolecular interactions based on the free volume changes initiated by stress conditions during storage. Since most of these interactions involve secondary bonds thus their rearrangements modify the size and distribution of free volume holes as a function of storage time. The applied experimental setup represents a useful approach to track the effect of ageing of the polymeric carrier on the solid-state changes of the active and the functionality-related characteristics of the delivery system.

Biography

Romana Zelko has her expertise in formulation and stability tracking of polymer-based drug delivery systems including various micro- and nanofibrous systems. Her research work focuses on different synthetic and natural polymeric delivery systems, physical ageing of polymers, microstructural characterization of dosage forms associated with their functionality-related characteristics. She has published 190 journal papers and 5 patents. Presently, she is working as the Dean in the Faculty of Pharmacy, Semmelweis University. She advanced her studies in the pharmaceutical technology at the Ghent University, Belgium.

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Notes:

Rashid Mahmood, Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-004



Rashid Mahmood

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BIOPOLYMERS MEETING 2017

Hot Melt Extrusion: An Emerging Drug Delivery Technology

Hot melt extrusion (HME) is emerging technology which is gaining high importance in the pharmaceutical industry as a novel technique for the preparation of various dosage forms and drug delivery systems, for example granules and sustained release tablets. It is a fast growing technology platform that is utilized to solve difficult formulation challenges, primarily in the area of solubilization. Due to fast processing, high degree of automation, absence of solvents, simple and continuous operation and ability to process poorly compactable material into tablet form are some of the main advantages offered over conventional processing by this emerging technique. An application of HME in pharmaceutical industry continues to grow and recent successes of this technique have made it a useful tool of consideration as a drug delivery solution.

The use of hot-melt extrusion (HME) within the pharmaceutical industry is steadily increasing, due to its proven ability to efficiently manufacture novel products. . HME involves the application of heat, pressure and agitation through an extrusion channel to mix materials together, and subsequently forcing them out through a die. Twin-screw extruders are most popular in solid dosage form development as it imparts both dispersive and distributive mixing. It blends materials while also imparting high shear to break-up particles and disperse them. HME extrusion has been shown to molecularly disperse poorly soluble drugs in a polymer carrier, increasing dissolution rates and bioavailability.

Biography

Rashid Mahmood has Master Degree in Analytical Chemistry and MS in Total Quality Management. He has 13 years of experience of Pharmaceutical Quality Operations and has attended many international conferences as a keynote speaker. He has presented various talks in USA & China on Cleaning Validation, cGMP Guidelines and Quality Risk Management.

Currently he is working as a Senior Executive Manager Quality Operations for Surge Lab.(Manufacturer of Microencapsulated APIs, Liquid & Dry Powder Parentrals) which is the best export oriented company in Pakistan.

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BIOPOLYMERS MEETING 2017

DAY 1
SCIENTIFIC SESSIONS

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Biopolymers | Nanotechnology in Drug Delivery | Polymer Material Science & Engineering | Polymer Nanotechnology | Bio Renewable Biopolymers | Biodegradable Polymers

Session Chair
Romana Zelko
Semmelweis University, Hungary

Session Introduction

Title: **Concentration regimes of biopolymers xanthan, tara and clairana, comparing dynamic light scattering and distribution of relaxation time**

Patrícia Diaz de Oliveria, Federal University of Pelotas, Brazil

Title: **Modeling of phase behaviors for hydrogen bonding polymer solution using pc-saft equation of state**

Bong-Seop Lee, Kuyngnam University, Republic of Korea

Title: **Influence of surface charge density and nacl concentration on the intrinsic viscosity of cellulose nanocrystal suspensions**

Siqun Wang, University of Tennessee, USA

Title: **Self-assembled tripeptide fibers as prebiotic RNA binders**

Tony Z Jia, Tokyo Institute of Technology, Japan

Title: **Thermogels as an injectable 3D scaffold**

Byeongmoon Jeong, Ewha Womans University, Republic of Korea

Title: **13C labeling gives insight into contribution of PHB precursors in Synechocystis sp. PCC 6803**

Vaishali Dutt, ICGEB, India

Title: **Nanoformulations for Hsp90 Inhibitors for Cancer Therapy**

Ankit K Rochani, Toyo University, Japan

Meetings International

Patricia Diaz de Oliveria et al., Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

Concentration regimes of biopolymers xanthan, tara and clairana, comparing dynamic light scattering and distribution of relaxation time

Patricia Diaz de Oliveria[1], Ricardo C Michel[2], Alan J A McBride[1], Angelita da Silveira Moreira[1], Rosana F T Lomba[3] and Claire T Vendruscolo[1]

[1]Federal University of Pelotas, Brazil

[2]Federal University of Rio de Janeiro, Brazil

[3]Well Engineering Technology Research and Development Centre Petrobras, Brazil

The aim of this work was to evaluate the utilization of analysis of the Distribution of Relaxation Time (DRT) using a dynamic light back-scattering technique as alternative method for the determination of the concentration regimes in aqueous solutions of biopolymers (xanthan, clairana and tara gums) by an analysis of the overlap (c*) and aggregation (c**) concentrations. The diffusion coefficients were obtained over a range of concentrations for each biopolymer using two methods. The first method analyzed the behavior of the diffusion coefficient as a function of the concentration of the gum solution. This method is based on the analysis of the diffusion coefficient versus the concentration curve. Using the slope of the curves, it was possible to determine the c* and c** for xanthan and tara gum. However, it was not possible to determine the concentration regimes for clairana using this method. The second method was based on an analysis of the DRTs, which showed different numbers of relaxation modes. It was observed that the concentrations at which the number of modes changed corresponded to the c* and c**. Thus, the DRT technique provided as an alternative method for the determination of the critical concentrations of biopolymers.

Biography

Patricia Diaz de Oliveira is an Adjunct Professor at Federal University of Pelotas, Rio Grande do Sul, Brazil. She holds a degree in Chemical Engineering from the Federal University of Rio Grande and a Doctorate in Biotechnology from Federal University of Pelotas. Presently, she is doing research at the Biopolymers Laboratory of UFPel.

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Bong-Seop Lee, Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

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ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

Modeling of phase behaviors for hydrogen bonding polymer solution using PC-SAFT equation of state

Bong-Seop Lee
Kuyngnam University, Republic of Korea

Modeling of the phase behavior of polymer solutions is a crucial requirement to develop new polymer solution technologies and to design various polymer processes, such as purification, fractionation, devolatilization and polymer production. In particular, the Liquid-Liquid Equilibrium (LLE) calculation is essential for processes design of polymerization. The hydrogen bonding in polymer solutions leads to deviate remarkably from normal solutions behaviors and is a major cause of different phase behaviors. The perturbed-chain statistical association Fluid Theory (PC-SAFT) Equation of State (EoS) is applied to calculate the pressure-volume-temperature (PVT), infinite dilution weight fraction activity coefficient (WFAC), Vapor-Liquid Equilibrium (VLE) and Liquid-Liquid Equilibrium (LLE) of associating polymer mixtures with hydrogen bonding association such as self- and cross-association with various phase behaviors such as Upper Critical Solution Temperature (UCST), the Lower Critical Solution Temperature (LCST) and closed-loop of polymer solutions. The PC-SAFT model shows a satisfactory performance.

Biography

Bong-Seop Lee has his expertise in modeling the phase behaviors on organic molecules, polymers, biological molecules (i.e., amino acid, peptide) and electrolyte solutions (i.e., inorganic salt, ionic liquids). He has received his Master's degree and developed the electrolyte-PC-SAFT equation of state by combining PC-SAFT and primitive mean spherical approximation in his PhD course. In his Post-doctoral studies, he focused on the modeling of physical and chemical properties of ionic liquid mixtures. His research interest is in dissociation phenomena of weak and strong acids and the equilibrium of various materials (polymer, blend, organic solvent) at high pressure condition.

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Siqun Wang et al., Polym Sci 2017, 3:4
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ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

Influence of surface charge density and NaCl concentration on the intrinsic viscosity of cellulose nanocrystal suspensions

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[1]University of Tennessee, USA
[2]Zhejiang A&F University, China

Cellulose Nanocrystals (CNCs) with similar size and various surface charge densities were prepared by sulfuric acid hydrolysis and NaOH desulfation. The influence of surface charge density and NaCl concentration on the intrinsic viscosity of CNC suspensions and predicted aspect ratio were investigated by Ubbelohde viscometer. With decreased CNC surface charge density, the intrinsic viscosity initially decreased due to the electric double layers on the CNC surface and subsequently increased due to CNC aggregation. To screen electro viscous effect, NaCl was added into CNC suspensions. With increased NaCl concentration, the intrinsic viscosity of CNC suspensions first decreased and then increased. The aspect ratios of CNCs predicted by Batchelor equation from the minimum intrinsic viscosity were consistent with that measured by transmission electron microscopy (TEM). Suspensions of CNCs with higher surface charge density needed less NaCl to obtain minimum intrinsic viscosity. The NaCl content that should be added to the suspension to predict the actual physical aspect ratio of CNC can be estimated by Debye-Hückel theory, assuming that the Debye length is equal to the CNC diameter.

Biography

Siqun Wang is a Professor in the UT Center for Renewable Carbon. His research interests include nano-mechanics, cellulose nano-materials, bio-based carbon materials, manufacture and performance of wood-based composites, natural fiber-reinforced plastic composites, bio-nanocomposites, wood adhesion, cellulose nano-material impact on soil, soil recovery, heavy metal removal from water and wood quality. He has authored or co-authored more than 200 referred journal articles.

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Tony Z Jia, Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

Self-assembled tripeptide fibers as prebiotic RNA binders

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Tokyo Institute of Technology, Japan

Before the emergence of the first RNA polymerase ribozyme, sustained non-enzymatic replication of RNA was crucial to the development of early life. To that end, cationic peptides have been hypothesized to be able to assist in template-directed non-enzymatic RNA polymerization by binding to and selectively inhibiting the annealing of long, complementary RNA strands. These strands can then act as templates for free primer strands, resulting in progressive replicative turnovers. However, the geochemical scenarios that would allow for the accumulation of high concentrations of long, cationic peptide oligomers are not likely. Recently, it has been discovered that certain tripeptide systems can spontaneously self-assemble into hydrogels and fibrillar macrostructures. As the accumulation of high concentrations of peptide trimers is much more likely than longer oligopeptides on the early earth, we probed the self-assembly properties and RNA-binding affinities of six tripeptides, each containing a cationic residue in the N-terminal position followed by an aromatic or hydrophobic dyad. KYF and RFF showed the best fibrillar self-assembly propensity-RFF is the first purely-peptidic arginine-containing tripeptide to self-assemble and microscopy and binding assays show that RNA indeed binds to the structures generated by these tripeptides. In fact, binding of a fluorescent RNA to cationic fibrillar macrostructures resulted in a direct label-free method of visualizing the kinetics of nanostructure assembly in real time. As these tripeptide assemblies are also reasonably heat-stable and do not prohibitively inhibit nonenzymatic RNA replication, our studies suggest that cationic tripeptide nanostructures could have been prebiotically-plausible RNA-binders, potentially possessing the ability to assist in the replication and eventual evolution of early genetic systems.

Biography

Tony Z Jia is a Researcher of the Earth-Life Science Institute at the Tokyo Institute of Technology in Tokyo, Japan. His research interests include prebiotic and ancient biopolymer formation and evolution.

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Byeongmoon Jeong, Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

Thermogels as an injectable 3D scaffold

Byeongmoon Jeong
Ewha Womans University, Republic of Korea

3D scaffolds with in situ forming properties have been extensively investigated for injectable tissue engineering applications. Chemical reactions or physical association triggered by change in external stimuli lead to the formation of the cell-incorporating hydrogel. However, to achieve the sustained delivery of growth factors, live cell retention and targeted differentiation into the cells are required in the in situ formed gel, which are based on the well-defined chemical and physical properties of a polymer. We have been developing thermogels which undergo solution-to-gel transition as the temperature increases. Mild and cytocompatible procedure for gel formation as well as capability to maintain a neutral pH during the degradation, polypeptide-based thermogels are proved to be an excellent platform for such purpose. As an injectable scaffold of stem cells, the physicochemical properties, the polypeptide thermogels and composite systems of the thermogels have been characterized. In addition, cell viability, differentiation of stem cells into target cells were monitored by using biomarker expressions and biofunctions of the differentiated cells. Polypeptide-based thermogels are very promising scaffolds for injectable tissue engineering applications and stem cell therapy to replace damaged/disease tissues in the future.

Biography

Byeongmoon Jeong has received his BS degree in the Department of Chemistry from Seoul National University, MS from KAIST and PhD in the Department of Pharmaceutics and Pharmaceutical Chemistry from the University of Utah. He has worked at Pacific Northwest National Laboratory, USA as a Senior Research Scientist prior to joining Ewha Womans University. He has authored 120 international peer-reviewed papers and patents on stimuli-sensitive polymers. He is also the Director of the National Research Laboratory on biodegradable thermogels. He was also a Fellow at Ewha Womans University and his research focuses on stimuli-sensitive hydrogels and their applications for drug delivery and tissue engineering.

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Vaishali Dutt et al., Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

Meetings International

ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

13C labeling gives insight into contribution of PHB precursors in *Synechocystis* sp. PCC 6803

Vaishali Dutt and Shireesh Srivastava
International Centre for Genetic Engineering and Biotechnology, India

The freshwater cyanobacterium Synechocystis sp. PCC 6803 is known to accumulate polyhydroxybutyrate when under nutrient stress. Many aspects of PHB accumulation have been studied in this cyanobacterium but there is no study to shed light on the contribution of PHB precursors. In nitrogen deprived cells, higher amount of PHB accumulates with acetate supplementation. However, the quantitative contribution of externally added acetate for PHB synthesis is not known. Similarly, the quantitative contribution of newly-fixed carbon for PHB synthesis is not clear, though a previous study has shown that the photosystem I (PS-I) shows detectable photosynthetic activity up to 350 h of nitrogen starvation and so the cells continue to produce ATP and the reducing equivalent NADPH. In this study, using labeled substrates, we have shown that: (1) Externally added acetate, while increasing the intracellular PHB levels to over two-fold, contributes about 50% to PHB synthesis in either photo-autotrophic or mixotrophic growth, (2) The newly-fixed C is also a big contributor to PHB synthesis and mixotrophic pre-growth significantly reduces the contributions of newly-fixed C to PHB. Indirectly, the labeling studies also show that intracellular C recycling is an important source of precursor for PHB synthesis, irrespective of the pre-growth mode. Thus, this study provides novel insights into PHB synthesis by cyanobacteria by identifying the quantitative contribution of precursors for PHB synthesis and the effect of pre-growth.

Biography

Vaishali Dutt has obtained her BS and MS degrees in Zoology from University of Delhi, India. She has qualified the CSIR-UGC National Eligibility Test and was awarded Fellowship to conduct research in the life sciences. Her research focuses on understanding the PHB accumulation in photosynthetic bacteria, strategies to enhance the accumulation of this polymer and engineering of cyanobacteria to synthesize biofuel candidates.

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Pouria Atabaki Pasdar et al., Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

Meetings International

ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

Preparation of intelligence antibacterial films based on low density poly ethylene and evaluation of its properties

Pouria Atabaki Pasdar and B Bahari Aban
Islamic Azad University, Iran

In this article, antibacterial film based on low density polyethylene (LDPE), potassium sorbate (KS) and ethylene vinyl alcohol (EVOH) copolymer were prepared and characterized using scanning electron microscopy(SEM), transmission electron microscopy (TEM), X-ray diffraction (XRD), differential scanning calorimetry (DSC) and tensile tests. The oxygen barrier properties of the LDPE/EVOH/KS film were significantly better than those of the LDPE/KS film. In addition to barrier properties, the LDPE/EVOH/KS film also had better elastic modulus than their counterparts without EVOH. The antimicrobial film containing potassium sorbate decreased the growth rate and maximum growth of yeast and extended the lag period before mold growth was apparent. Therefore, it can prevent or reduce the rate of microbial spoilage in low viscosity liquids and on the contacted surface area of solid food products and as the result may prolong the shelf life of food products when it is used as a packaging material. Also, a novel sticker sensor has been fabricated based on methyl red and tests have been conducted to detect the freshness of meat by its color change in real time (when the red methyl red paper changed to yellow). These are prepared by entrapping within a pH sensitive dye that responds, through visible color changes to the spoilage volatile compounds that contribute to a quantity known as total volatile basic nitrogen (TVBN). Finally, the methyl red was successfully used as a sticker sensor for the real-time monitoring of meat freshness in ambient and chiller conditions.

Biography

Pouria Atabaki Pasdar has received Bachelor's degree in Polymer Engineering from the Islamic Azad University, Science and Research branch, Tehran, Iran and pursuing Masters in Polymer Engineering in the same university. His current research focuses on investigation of food packaging, bioplastics and nanotechnology in order to increase the shelf-life of food packages.

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BIOPOLYMERS MEETING 2017

DAY 2
SCIENTIFIC SESSIONS

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Polymeric Biomaterials | Formulation Aspects | Bioplastics | Peptides and Protein Drug Delivery | Bio Renewable Biopolymers

Session Chair
Byeongmoon Jeong
Ewha Womans University, Republic of Korea

Session Introduction

Title: **Copper Based Multifunctional Nanocrystals for a Pragmatic Approach towards Cancer Theranostics**
M Sheikh Mohamed, Toyo University, Japan

Title: **Cationic Porphyrin Induced B-Z Transition of AT-Rich DNA**
Yun Jung Jang, Yeungnam University, Republic of Korea

Title: **Preparation of intelligence barrier films based on low density poly ethylene and evaluation of its properties**
B Bahari Aban, Islamic Azad University, Iran

Title: **Response surface method optimization of rice straw-liquefaction using crude glycerol for rigid polyurethane foam application**
Rosal Jane Ruda, Mindanao State University-IIT, Philippines

Title: **Effects of rice straw-based polyol on the thermophysical properties of rigid polyurethane foam**
Kriztine Magadan-Icalina, Mindanao State University-IIT, Philippines

M Sheikh Mohamed et al., Polym Sci 2017, 3:4
DOI: 10.4172/2471-9935-C1-005

Meetings International

ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

Copper Based Multifunctional Nanocrystals for a Pragmatic Approach towards Cancer Theranostics

M. Sheikh Mohamed[1], Srivani Veeranarayanan[1], Aby Cheruvathoor Poulose[1], Toru Maekawa[1], D. Sakthi Kumar[1]Yasushi Sakamoto[2]
[1]Bio Nano Electronics Research Centre, Toyo University, Japan
[2]Biomedical Research Centre, Saitama Medical University, Japan

Multifunctional nanocrystals (NCs) for bio-applications are gaining momentum due to their advantageous role of performing multiple functions simultaneously. For example, NCs with simultaneous imaging and therapeutic potential are highly attractive as they can serve for image-guided therapy and can be considered for personalized cancer medicine. Especially Cu based NCs are garnering increased attention recently for their ease of preparation, biocompatibility and multimodal applications. Herein we present a series of plasmonically active Cu based NCs for cancer theranostics. The main features that would be discussed will be about multi-stimuli responsive chemotherapeutics as well as multimodal drug-free alternative theranostic options. The application of these NCs in diagnostic modalities such as photoacoustic, X-ray contrast, and optical (visible and NIR) imaging would be discussed. As far as therapeutic modality is concerned, chemo (external stimuli such as NIR and visible light responsive drug release), photothermal and photodynamic therapeutic options would be presented. The immense potential of these NCs cannot be undermined and they are sure to make a lasting impression in the nanomedicine/theranostics arena.

Biography

Dr. M. Sheikh Mohamed, currently a post-doctoral researcher at Bio-Nano Electronics Research Centre, Toyo University, Japan has nearly 8 years of research experience in the field of Bio-Nano Fusion Sciences, with a focus on synthesis and application of multifunctional nanoparticles for cancer theranostics. He has received best young researcher and best poster awards at International conferences and has published 15 peer-reviewed research articles with five cover pages in reputed journals, which have also been featured as news articles. Previously, he received the University Gold Medal during his M.Phil. in India and subsequently the prestigious Monbukagakusho Scholarship to pursue his Ph.D. in Japan.

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Yun Jung Jang et al., Polym Sci 2017, 3:4
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Meetings International

ANNUAL MEETING ON
BIOPOLYMERS AND DRUG DELIVERY SYSTEMS
OCTOBER 12-13, 2017 OSAKA, JAPAN

Cationic porphyrin induced B-Z transition of AT-rich DNA

Yun Jung Jang and Seog K Kim
Yeungnam University, Republic of Korea

Cationic porphyrins interact with DNAs. Binding mode of porphyrins depends on various factors including nature of DNA sequences and the periphery substituents. Trans-bis(N-methylpyridium-4-yl) diphenyl porphyrin (trans-BMPyP) also bind to DNAs. Upon binding to poly[d(A-T)2], typical circular dichroism (CD) spectrum in the DNA absorption region for B-form was reversed, suggesting formation of left-handed helical structure (Z-form). The formation of Z-form was confirmed by 31P NMR, in which a single 31P peak of B-form was split into two peaks, reflecting two distinctive environments for the DNA phosphate groups, which is typical for Z-form DNA. Trans-BMPyP-induce B-Z transition occurred specifically for polynucleotide having alternated AT sequences. No other combination of nucleobase sequence produced similar B-Z transition. This observation is in contrast with typical DNA sequence, alternating GC sequence (poly[d(G-C)2]), that exhibits the B-Z transition. Cationic porphyrin has been known to intercalate between GC base pairs, while they stack along AT-rich DNAs. Pattern of stacking along DNA stem may be an important factor for this alternating AT sequence-specific B-Z transition. B-Z transition of alternating AT sequence requires at least 14 base-pairs, supporting the importance of porphyrin stacking along AT stem. The position of cationic ion on the periphery methyl pyridine ion also takes an essential role. When the methyl group locates at meta- or para-position, both cationic porphyrins similarly induce B-Z transition, while that at ortho-position, in which free-rotation of pyridine ring is sterically prevented, did not. This observation also indicated the importance of stacking of porphyrins along poly[d(A-T)2] stem, because the former two porphyrins can be planar, therefore can stack each other. On the other hand, ortho-trans-BMPyP cannot be planar and stacking is inefficient.

Biography

Yun Jung Jang has her expertise in ligand-DNA interaction and synthesis of metal complexes that interact with DNA. She has her PhD degree at Daedu Catholic University and worked in Yeungnam University as a Research Assistant Professor in the DNA-drug interaction field. Presently, she is Assistant Professor in the College of Basic Education, Yeungnam University.

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Preparation of intelligence antibacterial films based on low density poly ethylene and evaluation of its properties

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In this article, antibacterial film based on Low Density Polyethylene (LDPE), Potassium Sorbate (KS) and ethylene vinyl alcohol (EVOH) copolymer were prepared and characterized using Scanning Electron Microscopy (SEM), transmission electron microscopy (TEM), X-Ray Diffraction (XRD), differential scanning calorimetry (DSC) and tensile tests. The oxygen barrier properties of the LDPE/EVOH/KS film were significantly better than those of the LDPE/KS film. In addition to barrier properties, the LDPE/EVOH/KS film also had better elastic modulus than their counterparts without EVOH. The antimicrobial film containing potassium sorbate decreased the growth rate and maximum growth of yeast and extended the lag period before mold growth was apparent. Therefore, it can prevent or reduce the rate of microbial spoilage in low viscosity liquids and on the contacted surface area of solid food products and as the result may prolong the shelf life of food products when it is used as a packaging material. Also, a novel sticker sensor has been fabricated based on methyl red and tests have been conducted to detect the freshness of meat by its color change in real time (when the red methyl red paper changed to yellow). These are prepared by entrapping within a pH sensitive dye that responds, through visible color changes to the spoilage volatile compounds that contribute to a quantity known as total volatile basic nitrogen (TVBN). Finally, the methyl red was successfully used as a sticker sensor for the real-time monitoring of meat freshness in ambient and chiller conditions..

Biography

Pouria Atabaki Pasdar has received his Bachelor's degree in Polymer Engineering from the Islamic Azad University, Science and Research branch, Tehran, Iran and presently pursuing Masters in Polymer Engineering from the same university. His current research focuses on investigation of food packaging, bioplastics and nanotechnology in order to increase the shelf-life of food packages.

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Response surface method optimization of rice straw-liquefaction using crude glycerol for rigid polyurethane foam application

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Polyurethane is a versatile class of polymer produced from the condensation polymerization of isocyanates and polyol, a hydroxyl-rich compound. Its application can be found in adhesives, sealants, coatings, flexible and rigid foams. However, polyol is traditionally sourced from petroleum raw materials. With increasing environmental and sustainability problems, lignocellulosic biomass is a potential alternative source due to its abundance, biodegradability and its hydroxyl component. In the Philippines, 11.3 M tons of rice straw is produced annually which when burned produces air pollutants such as carbon dioxide, nitrogen oxide and sulfur dioxide. Rice straw can be liquefied using an atmospheric liquefaction process with the use of a catalyst. Researchers reported that varying liquefaction parameters can significantly alter the properties of a polyol. The purpose of the study is to produce rice straw-based polyol with a low acid number, high OH number, low viscosity and high liquefaction ratio which are suitable for rigid foam applications. A one-pot liquefaction process was used to liquefy rice straw with the use of sulfuric acid as catalyst and crude glycerol as liquefaction solvent. Response surface methodology was used to optimize four factors: Acid loading, biomass loading, reaction time and reaction temperature based on four responses, acid number, OH number, liquefaction ratio and viscosity. Statistical analysis showed that all four factors have a significant effect on polyol properties. Increasing the acid loading was shown to significantly increase residual acid while higher reaction times lead to a decrease in liquefaction efficiency. Polyols with optimum properties were produced at a reaction time of 180-300 minutes, acid loading of 1-2%, reaction temperature of 170-180 °C and a biomass loading of 10-15%.

Biography

Rosal Jane G Ruda is currently pursuing Master of Science in Materials Science and Engineering at Mindanao State University-Iligan Institute of Technology. She is also working as a University Research Associate under Dr. Arnold A. Lubguban working in polymer research.

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Kriztine Magadan-Icalina et al., Polym Sci 2017, 3:4
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Effects of rice straw-based polyol on the thermo physical properties of rigid polyurethane foam

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Statement of the Problem: Vegetable oils and lignocellulosic biomass are two major types of bio-based resources gaining interest for bio-based polyols for Poly Urethane (PU) production. However, the consumption of huge amounts of vegetable oils could result in a shortage of vegetable oils and will cause the increase in food prices. Therefore, lignocellulosic biomass is seen as a better alternative raw material for PU production. Various kinds of lignocellulosic biomass have been used for the production of bio-based PU foams but the use of lignocellulosic rice straw is not yet explored. Thus, the study aims to develop PU rigid foam from rice straw-based polyol and investigate the effect of isocyanate index on the thermo physical properties of the foam.

Methodology & Theoretical Orientation: PU foams were prepared by reacting isocyanates in varying indices with polyols containing 15% of rice straw-based polyol and 85% petroleum-based polyol and their thermal conductivity, density and compressive strength were determined.

Findings: PU foams with no biopolyol replacement have superior thermal and mechanical properties over the PU foams with biopolyol replacement. However, those with biopolyol replacement were significant less dense compared to the commercial formulation. This could indicate possible application in industries where lightweight materials are important. Thermal characterization of the foam samples at different isocyanate indices indicate that increasing the isocyanate content improves insulation property of the PU as evident with the decreasing conductivity. This is also true with compressive strength. The index is directly proportional to the compressive strength. Density, on the other hand, is directly proportional to the isocyanate content.

Conclusion & Significance: Successful development of PU rigid foam products using biomass-based polyols obtained from a renewable feed stock rice straw offers a practical and economic procedure for potential scale-up and commercialization.

Biography

Kriztine Magadan-Icalina is a licensed Chemical Engineer and is currently pursuing her Master of Science in Material Science and Engineering in Mindanao State University, Iligan Institute of Technology.

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Faiza Abdu et al., Polym Sci 2017, 3:4
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The anticancer activity of the combination therapy of Gemcitabine and Doxorubicin encapsulated in a nanoemulsion

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Doxorubicin (DOX) is a chemotherapeutic drug used for the treatment of a wide variety of cancers. It is known to cause cardiotoxicity. Gemcitabine (GEM) is an anticancer drug, but it has certain limitations like short biological half-life. A new paradigm to improve DOX and GEM therapeutic index is to administer them in nanoparticles (NPs). Nanoemulsions (NEs) are well-characterized NPs drug carriers that have been broadly implemented in the delivery of anticancer therapeutics. In this study, the antitumor activity of the combination formulas of GEM and DOX, either loaded in water (GEM+DOX-Sol) or NEs (GEM+DOX/LNE), were evaluated in Ehrlich ascites carcinoma (EAC) bearing swiss albino mice. The anticancer assessment of the NEs formulas in 200 mice divided into 10 groups included the detection of the change in body weight, hematological and serum biochemical profiles and studying the histopathological alterations of the heart, liver and kidney tissues. Results showed that mice treated with GEM+DOX/LNE, which has z-average 155.38 nm and zeta potential of -38.5 mV, recorded a decrease in the mean tumor weight and significant increase in the cumulative mean survival time (MST), which was 60 days, as compared to the EAC control group, which has MST of 28 days. It also showed no significant changes in hematological and serum biochemical profiles compared to the normal group. In conclusion, the present study suggested that GEM treatment may significantly reduce cardiotoxicity induced by DOX in EAC-bearing mice. Also, GEM enhances the antitumor properties of DOX by increasing its inhibitory effect on tumor growth.

Biography

Faiza Abdu is a Professor and the Vice Dean of Faculty of Sciences, Biology Department, King Abdulaziz University, Saudi Arabia. She is also a Supervisor of Neuroscience Unit in King Fahad Medical Research Center. Her experimental approach is on physiology and neuroscience. She has collaboration with many scientists in many fields mainly in cancer and nanotechnology.

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Comparison of the bio stimulating capacity of degradation of Poly(3-hydroxybutyrate) by forage plants and microorganisms in simulated soil

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Polyhydroxybutyrate [P(3HB)] is a microbial polyester and possess characteristics adequate to petrochemical plastics substitution as polypropylene. It is completely biodegradable and the speed of degradation depends on environmental characteristics as microbiota, temperature and humidity. So, we measured the degradation rate of P(3HB) synthesized by the bacterium *Ralstonia solanacearum* [P(3HB) RS] in a simulated soil model. The aim of the study was to evaluate the degradation capability effectiveness of the bacteria *Ralstonia solanacearum* and *Bacillus megaterium* CN3 and the bacterial degradation bio stimulating capability of the foraging plants *Lolium multiflorum* (Ryegrass) and *Lotus corniculatus* (Birdsfoot trefoil). With P(3HB) RS, produced by bacterium *Ralstonia solanacearum* RS and commercial P(3HB) Biocycle® [PHB Industrial S.A., Brazil] (control), films were produced by solubilizing up 1g in 40 mL of chloroform for 30 min at 58 °C and evaporation in petry plate to film formation. Samples were cut, weighed and separated into polyester bags with three samples each and buried in the soil to be removed at intervals of 20, 40, 60, 80 and 100 days. Trays for plant germination, containing individual cells full of commercial organic soil were used. The soil treatments were: (1) Natural soil grown with both plants, (2) natural soil grown with ryegrass, (3) natural soil grown with Birdsfoot trefoil, (4) natural soil without plants, (5) sterilized soil, (6) sterilized soil inoculated with R. *solanacearum*, (7) sterilized soil inoculated with B. *megaterium*, and (8) only natural soil. The plants used did not stimulate the biodegradation, but despite that, they helped in the fragmentation of the sample. For bacterial treatments, it was possible to affirm that B. *megaterium* is a more effective polymer degrader. Moreover, we can attest that polymer degradation is more effective in a microbiologically more favorable environment, since the treatment of unsterile soil without plants (trat.8) obtained the highest rate of degradation (100%).

Biography

Matheus Marques Torres is currently pursuing Bachelor's degree in Biotechnology at the Federal University of Pelotas, Brazil. He has developed his research activities in the Laboratory of Biopolymers where he works with studies related to the production, characterization and biodegradation of the bioplastic polyhydroxybutyrate (P(3HB).

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Drug discovery of FLT-3/c-KIT inhibitors as anticancer drugs

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Acute Myeloid Leukemia (AML) is an aggressive disease in which the rapid growth of abnormal leukemic cells in bone marrow inhibits the production of normal blood cells. Genetic mutations, such as FLT3 and c-KIT, play their roles in the stepwise leukemogenesis. The most frequent mutations among AML are FLT3 mutations. However, c-KIT mutations account for predicted higher relapse rate and less overall survival. Because development of point mutations or gene amplification of target proteins results in resistance of tyrosine kinase inhibitors, the use of a multi-targeted therapeutic approach is of potential clinical benefit. Several multi-targeted tyrosine kinase inhibitors have been developed toward clinical uses for treating AML, pancreatic cancer, non-small cell lung cancer, etc. They showed inhibitions of ABL, FLT3, c-KIT, RET, PDGFR, SRC and VEGFRs and an activity spectrum similar to tyrosine kinases-targeted drugs on the market. In the present study, a novel small molecular multi-targeted tyrosine kinase inhibitor DBPR487 was examined in *in vitro* kinase inhibition and cytotoxicity assays and evaluated for *in vivo* tumor growth inhibition efficacies. Furthermore, the plasma samples collected from the rats orally administered with DBPR487 were measured to determine the pharmacokinetic profile of DBPR487. Further preclinical toxicology and safety pharmacology studies are undergoing toward clinical development.

Biography

Min-Hsien Wang is a Research Assistant in Institute of Biotechnology and Pharmaceutical Research, National Health Research Institutes (NHRI). Her research interest is on drug discovery and development. Her work focuses on in vivo efficacy evaluation in rodents, establishment of disease animal models and toxicology study in rats. She has experiences on animal handling, compounds dosing in different routes and blood collection in animals. She has discovered lead compounds for a diabetes drug candidate (DBPR108) and anti-cancer drug candidates (DBPR112, DBPR114, DBPR115). She has publications in reputed journals which include *Bioorganic & Medicinal Chemistry Letters Journal, Journal of Medicinal Chemistry and European Journal of Medicinal Chemistry.*

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Novel and validated spectrophotometric estimation of Indomethacin in bulk and solid dosage formulation using mixed hydrotropic solubilization technique

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Around 40% of New Chemical Entities (NCE's) are poorly water soluble and not well absorbed after oral administration. To overcome the problems associated with oral absorption and bioavailability of these poorly soluble drugs, various strategies have been utilized out of which hydrotropic solubilization has shown promising results. The present study was undertaken on Indomethacin-a water insoluble drug to enhance its solubility using mixed hydrotropic solubilization technique followed by development and validation of UV spectrophotometric method for quantitative estimation of Indomethacin in bulk and pharmaceutical dosage forms. Preliminary solubility studies were carried out with different molars of hydrotropic agents and from the solubility studies performed, proper blend (1.5 M Sodium citrate and 1.5 M Sodium benzoate) of hydrotropic agents was selected for further study. UV spectrum and calibration curve of Indomethacin was established in selected blend of hydrotropic agents and it was found to exhibit λmax of 320 nm. Analysis of bulk drug of Indomethacin and marketed samples in chosen blend of hydrotropic agents was done and total drug content was calculated. The developed method was then validated as per ICH guidelines for linearity and range, accuracy, precision, limit of detection (LOD) and limit of quantification (LOQ). There was significant increase in solubility of Indomethacin with increase in molarity of hydrotropic agents and a blend of 1.5 M Sodium citrate and 1.5 M Sodium benzoate showed good results. Thus, it is concluded that the mixed hydrotropic solubilization can be effectively used for solubility enhancement of poorly water-soluble drugs and the proposed UV method which is new, simple, accurate and reproducible can be successfully employed for the routine analysis of Indomethacin in bulk samples as well as other pharmaceutical dosage forms.

Biography

Nisar Ahmad Khan is presently working as Senior Assistant Professor in the Department of Pharmaceutical Sciences, University of Kashmir, India. He has obtained his Bachelor's degree in Pharmacy from University of Kashmir and Master's degree in Pharmaceutics from SGSITS Indore, India. He has obtained his Doctorate degree in Pharmaceutics from University of Kashmir in the field of novel drug delivery systems. He has his expertise in formulation of hydrodynamically balanced drug delivery systems in the form of single unit or multiple units and has expertise in the Gastroretentive DRUG delivery systems (GRDDS). He has also worked in the field of solid dispersion technology, hydrotropic solubilization and cosmetology.

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Preparation and evaluation of gastro-retentive floating tablets of bromhexine hydrochloride using thermoplastic granulation method

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Bromhexine hydrochloride thins and loosens mucus to help clear stubborn chest congestion and breathing difficulties due to excess mucus in cold, flu and respiratory tract infections. The need for its gastro-retention is that it is dissolved in the pH range of 1-4 and after that its dissolution almost ceases because of the low solubility in the lower region of the gastrointestinal tract. The oral bioavailability of Bromhexine HCl is 20%. Thus, the floating drug delivery system may help Bromhexine HCl to stay in the acidic pH for long time and improve its oral bioavailability. Floating tablets of Bromhexine HCl were prepared by using Thermoplastic Granulation technique. Different hydrophobic retardants were used namely carnauba wax, hydrogenated castor oil and a hydrophilic polymer HPMC E15V were used in different combinations at different ratios for the preparation of the tablets. They were evaluated for tablet thickness, hardness, weight variation, friability, floating lag time and in vitro drug release. Compatibility of the drug and polymers was assessed by Fourier transform infrared spectroscopy. Differential scanning calorimetry studies were also conducted. The λmax of Bromhexine HCl was found to be 248 nm. FT-IR spectroscopy showed no interaction between the drug and polymers. DSC thermogram showed a sharp endothermic peak at 246 °C which is corresponding to melting point of the drug. The *in vitro* drug release study of the gastro-retentive floating tablets of Bromhexine HCl was found to be 89.3% at the end of 12 hours for formulation 10. All the 12 formulations remained buoyant and showed drug release up to 12 hours. The use of hydrophobic retardants and hydrophilic polymer in combination had its own advantages of maintaining integrity and buoyancy of tablets. It could be concluded that for the proper floating duration and *in vitro* release, the hydrophobic retardants and hydrophilic polymer must be used in proper ratio. Formulation 10 was considered as the optimized formulation.

Biography

Kelvin Bucktowar has obtained his BPharm and currently pursuing MPharm in Pharmaceutics at T John College of Pharmacy affiliated to Rajiv Gandhi University of Health Sciences, India. He has published numerous review and research articles in reputed journals.

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Jungmin Lee, Polym Sci 2017, 3:4
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Preparation of hydrogels using various starch Aldehydes

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Hydrogels are hydrophilic, three-dimensional, and expandable matrices that are produced through chemical and/or physical crosslinking of certain polymers. In some cases, polysaccharide-based hydrogels have been prepared from a single polysaccharide such as Carboxy Methyl Cellulose (CMC) and starch. CMC is an anionic water-soluble natural polymer derivative, which is widely used in detergents, oil exploration, and in the food, paper, and textile industries because of its viscosity-increasing properties. Starch is widely used in different fields such as food, environmental-friendly plastics, and medicine due to its low cost, biodegradability, and renewability. In this study, the polysaccharide hydrogels were prepared by esterification between hydroxyl groups of CMC and aldehyde group of modified starch. Epichlorohydrin and citric acid were used for crosslinker. The starches used in the experiments were corn starch, potato starch, and soluble starch. Sodium periodate was used as the oxidizing agent. The degree of aldehydes substitution (DS) of hydroxyl groups was varied with the amount of oxidizing agent, and the DS showed a minimum of 0.87 to a maximum of 2.79. As a result of analysis of the hydrogels, epichlorohydrin crosslinker showed a high swelling ratio when reacted with native starch. On the other hand, citric acid crosslinker showed good results when reacted with starch aldehydes. The maximum swelling ratio of hydrogel was about 50.

Biography

Jungmin Lee graduated from Seoul National University in 2008. He received a master's degree from Seoul National University in 2013. He is a PhD student of Department of Biosystems and Biomaterials Science and Engineering, Seoul National University. He has published more than 5 papers in reputed journals.

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Min Goo Jee, Polym Sci 2017, 3:4
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Study of Thermal Properties of Poly(phenylene sulfide)/Multi-Walled Carbon Nanotubes/Aluminum Nitride Composite

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The PPS/MWCNTs/AlN composite was prepared with poly (Phenylene Sulfide) (PPS), Covalent Functionalized Multi-Walled Carbon Nanotubes (fMWCNTs), and Aluminum Nitride (AlN) via melt-blending techniques. The AlN is a non-oxidizing ceramic material having the highest thermal conductivity among the ceramic materials. A silane coupling agent was used to introduce the functional groups on the surface of the AIN, as it is able to graft with the functional groups on the covalent functionalized MWCNTs. The salinization reaction of the AlN was characterized qualitatively and quantitatively by FT-IR (Fourier Transform Infrared Spectroscopy), and XPS (X-ray Photoelectron Spectroscopy). The grafting reaction of the AlN particles on the MWCNTs was observed using UV–Vis (Ultraviolet-Visible Spectroscopy), FE-SEM (Field-Emission Scanning Electron Microscopy) and FE-TEM (Field-Emission Transmission Electron Microscopy) images. The grafting reaction was accomplished by observing the change of the transmittance, the morphology of the AlN particle bonded to the MWCNTs. For the morphological changes of the fractured surface of the PPS/MWCNTs/AlN composites by FE-SEM, the hybrid filler was homogeneously dispersed on the PPS matrix when the AlN particle was grafted on the MWCNTs. The homogeneous distribution of the hybrid filler acts as a heat transfer path, which led the improved thermal properties, such as thermal conductivity, thermal resistance, and melting temperature than those of not grafted MWCNTs.

Biography

Min Goo Jee graduated from Kyungpook National University in 2017. He is master course student of Department of biosystems and biomaterials science and engineering, Seoul National University.

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Dahyun Kim, Polym Sci 2017, 3:4
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Preparation of Carboxymethyl cellulose based-hydrogels using polycarboxylic acids

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Starch is one of the most abundant polysaccharides in the nature, which is composed of a mixture of amylose and amylopectin. Sodium Carboxymethyl Cellulose (CMC) is an anionic water-soluble polymer derivative. In this study, the preparation of superabsorbent hydrogels has been investigated with sodium carboxymethyl cellulose and Dialdehyde Starch (DAS). The dialdehyde starch was synthesized from the oxidation of the starch using sodium periodate to improve the functionality of the starch. In addition, hydrogels were prepared by using citric acid and succinic acid as a non-toxic and biodegradable crosslinking agent at various ratios. When heated, citric acid will dehydrate to form an anhydride, which will react with hydroxyl group of polysaccharide. The chemical structure of hydrogels was characterized using FT-IR spectroscopy. The swelling behavior of hydrogels was investigated in distilled water and 0.9% NaCl solution.

Biography

Dahyun Kim graduated from Seoul National University in 2016. She is Master course student of Department of biosystems and biomaterials science and engineering, Seoul National University.

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Jihyun Yeo, Polym Sci 2017, 3:4
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Preparation of polysaccharide hydrogels with different process methods

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Polysaccharides derived from natural resources are widely used to develop superabsorbent polymers. Previous studies were grafting petroleum-based synthetic polymers onto polysaccharides. But, these products have a disadvantage that complete biodegradation is impossible. In this study, modified starch and CMC were used as main materials, and chemical bonding of two polysaccharides was tried by esterification. Starch modification and hydrogel preparation were conducted as follows. First, the oxidation of starch was carried out in order to improve the functionality of compound. The hydroxyl groups, primarily at C-2, C-3, and C-6 positions, were transformed to aldehyde and carboxylic acid by oxidation. And then, the polysaccharide hydrogels were prepared by esterification between hydroxyl groups of CMC (or CMC-g-itaconic acid) and aldehyde group of modified starch. The final product was prepared in the form of powder or film, and various characteristics were analyzed. FT-IR spectrometer was used to confirm the chemical structure of products. The FT-IR spectra of starch aldehydes showed the characteristic IR bands at ~1735 cm-1, which confirm the oxidation of starch. In FT-IR analysis of hydrogels, the peaks related to ester bonding were observed. When hydrogel was prepared in powder form, it was confirmed that all samples showed two peaks at 1750 cm-1 and 1660 cm-1. In film form, two peaks were observed at 1710 cm-1 and 1610 cm-1 in all samples using CMC-g-itaconic acid. The maximum swelling ratio of hydrogel was about 25.

Biography

Jihyun Yeo has completed her bachelor at the age of 22 years from Kyung Hee University and is taking a master's degree at Department of biosystems and biomaterials science and engineering, Seoul National University.

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Preparation and characteristics of PPS composites using glass fiber and reduced Graphene Oxide

Juhee Byeon
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These days, a research that related to automobile and advanced electro materials has been concentrated on weight reduction of materials. In particular, a competition in the development of lightweight materials is intensifying due to various issues such as responding to environmental regulations and electric cars. In addition, various materials such as light metal materials are being replaced by carbon-based materials and high-performance plastic materials In this study, Polyphenylene Sulfide/ Glass fiber/ reduced graphene oxide Composites were prepared by Twin screw extruder and injection molding processes. And then, we have investigated surface properties by Scanning electron microscopy (SEM). Thermal stabilities and Thermal conductivities were analyzed by Thermo gravimetric analysis and C-Therm TCi. Mechanical properties were examined by Universal Testing Machine (UTM). These results indicated that PPS/GF/RGO composites were enhanced thermal properties and mechanical.

Biography

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Patricia Diaz de Oliveira et al., Polym Sci 2017, 3:4
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Efficiency of Brazilian xanthan encapsulation and associations in the microencapsulation of probiotics (*Lactobacillus acidophillus*)

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Probiotic microorganism's consumption generates several benefits when they are significantly viable in the products in which they are applied. However, some processing conditions are unfavorable to their survival, as well as the food's own characteristics and storage conditions. Due to the low viability of probiotics when added as free cells, different technologies have been used in order to increase their survival in food. Our study aimed to evaluate of *Lactobacillus acidophilus* encapsulation efficiency by the spray dryer using xanthan pruni, which is produced by a Brazilian strain of *Xanthomonas arboricola* pv pruni, as encapsulating agent and Aerosil® as dispersant. Different encapsulating solutions were prepared in according to a rotational central composite design (RCCD) ($p<0.05$), using a full factorial 2^2 with triplicate at the central point, totaling 11 treatments. Glycerol was added at 20% relative to the total polymer mass. The microcapsules were produced in spray dryer (LabMaq MSD 1.0), with inlet temperature of 120 °C and outlet of 60 °C, with an air flow rate of 3 $L.h^{-1}$ and inlet speed of 0.4 $l.h^{-1}$. The microcapsules were stored in a desiccator at 25 °C. The survival percents were determined by comparing the concentration of viable microorganisms after the dryer process with the initial microbial concentrations. Xanthan pruni exerted positive effect on the microorganism viability within the studied range ($r=0.9423$). The mathematical model generated (viability (%)=75.10+1.90X2-1.62A) was predictive and significant within the studied range ($r=0.667$). A positive influence of the concentration of xanthan pruni in the microbial viability after dryer process was observed; which was caused, probably, by thermal protection due to the microorganism's encapsulation. These results denote xanthan pruni as potential encapsulating agent to probiotics microorganisms.

Biography

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Combined use of zoledronic acid augments ursolic acid-induced apoptosis in human osteosarcoma cells through enhanced oxidative stress and autophagy

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Ursolic Acid (UA), a naturally occurring pentacyclic triterpene acid found in many medicinal herbs and edible plants, triggers apoptosis in several tumor cell lines but not in human bone cancer cells. Most recently, we have demonstrated that UA exposure reduces the viability of human osteosarcoma MG-63 cells through enhanced oxidative stress and apoptosis. Interestingly, an inhibitor of osteoclast-mediated bone resorption, Zoledronic Acid (ZOL), also a third-generation nitrogen-containing bisphosphonate, is effective in the treatment of bone metastases in patients with various solid tumors. In this present study, we found that UA combined with ZOL to significantly suppress cell viability, colony formation, and induce apoptosis in two lines of human osteosarcoma cells. The pre-treatment of the antioxidant had reversed the oxidative stress and cell viability inhibition in the combined treatment, indicating that oxidative stress is important in the combined anti-tumor effects. Moreover, we demonstrated that ZOL combined with UA significantly induced autophagy and co-administration of autophagy inhibitor reduces the growth inhibitory effect of combined treatment. Collectively, these data shed light on the pathways involved in the combined effects of ZOL and UA that might serve as a potential therapy against osteosarcoma.

Biography

Chia-Chieh Wu is currently pursuing his PhD degree at the Institute of Biomedical Sciences, National Chung Hsing University in Taiwan.

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Optimization of Alpinia galanga oil loaded self-nanoemulsifying drug delivery system using design of experiments for fish anesthesia

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Ethanol used for enhancing water miscibility of the essential oils for fish anesthesia provides undesirable side effects to the fish. The aim of this study was to develop a water dispersible formulation of Alpinia galanga oil (AGO) self-nanoemulsifying drug delivery systems (SNEDDS) in order to minimize the amount of ethanol in the formulation and to investigate the effects of the AGO and AGO-SNEDDS for fish anesthesia. Response surface methodology was used to investigate how excipients affect the droplet size on AGO-SNEDDS formation. The fish anesthetic activity of AGO-SNEDDS with different droplet sizes was evaluated by the time it took for zebrafish (Danio rerio) to go into surgical anesthesia stage which fish stopped swimming activity, showed loss of equilibrium and responsiveness and subsequent recovery. The predicted contour plots of droplet size indicated that cremophor RH 40 provided smaller droplet size than tween 80. The goodness of model fitting (R2>0.89), prediction power (Q2>0.72) and the droplet size values between prediction and real measurement showed similar values (% error <10%). Therefore, these models had a good prediction power. Cremophor RH 40, miglyol 812:capmul MCM EP=1:1 and AGO concentrations showed the most influential variables affecting the droplet size. The droplet size plays an important role in fish anesthesia. The larger droplet required longer time to take fish to enter surgical anesthesia stage. SNEDDS3 with a droplet size around 200 nm sedated the fish into the anesthetic stage within 270 sec, significantly slower than SNEDDS1 and SNEDDS2 (218 and 212 sec) with droplet sizes around 60 and 110 nm ($p<0.03$). All formulations had significantly increased anesthetic activity compared to AGO in an ethanolic solution. In conclusion, the SNEDDS are promising nano delivery systems of AGO for anesthetic use in zebrafish.

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Nanoformulations for Hsp90 inhibitors for cancer therapy

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Heat shock protein (Hsp) 90 plays an important role in maintaining protein homeostasis and helps in cancer proliferation. Molecules targeting Hsp90 in multiple cancers have entered advanced clinical trials. However, Hsp90 targeted cancer therapy faces a major problem of the aqueous dispensability of drugs due to their hydrophobic nature. Nanoformulation using soft polymers has played an important role in the aqueous delivery of hydrophobic anticancer drugs. Hence, to address the formulation issue of hydrophobic-Hsp90 targeted drugs, we have developed Hsp90 inhibitors loaded polymeric nanoformulations, which can be dispensed using aqueous phase (devoid of organic solvents). We have developed 17AAG (first generation Hsp90 inhibitor) and Fe_3O_4 loaded PLGA magnetic nanoparticles (MNPs). We had developed two types of formulations (1:1:10 and 1:1:20) by relatively varying the concentration of PLGA polymer. Our study showed that ratio of 1:1:10 for (17AAG, Fe_3O_4 and PLGA) provided relatively better physicochemical and pharmacological response. The size of drug loaded polymeric MNPs from 1:1:10 nanoformulation were found to be 204 nm (confirmed with SEM and TEM images). These NPs provided dual mode of Pancreatic Cancer (MiaPaCa-2) cells destruction under in vitro conditions; rendered by magnetic hyperthermia (provide by Fe3O4) and Hsp90 inhibition (rendered by 17AAG). We have also developed novel albumin conjugated Hsp90 inhibitor loaded nanoparticles. We used standard desolvation method for the synthesis of drug conjugated albumin nanoparticles. Our studies showed that nab-Hsp90 inhibitor nanomedicine was found to have average particle size of around 222 nm (confirmed with high-resolution SEM and TEM images). Our study shows that the synthesized drug loaded albumin nanoparticles were found to be effective under in vitro condition against both pancreatic (MiaPaCa-2) and breast cancer (MCF7) cell lines. Our studies indicate that our nanomedicine platform, which consists of both synthetic and natural (protein based) polymers that can play a significant role the delivery of Hsp90 targeted anticancer drugs for next-generation anticancer therapy.

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Efficient delivery of structurally diverse protein cargo into mammalian cells by a bacterial toxin

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Given the vast array of applications for protein-based tools and therapeutics inside cells, there is great interest in developing safe and efficient protein delivery platforms that direct biologics into cells. To date, numerous approaches been investigated to facilitate protein entry into the cytoplasm of cells, however, though each capable of delivering protein cargo into cells to varying degrees, general mechanism-based limitations exist for these platforms. In particular, selectivity and/or efficiency remain elusive features for most platforms owing to their shared nonspecific mode of interaction with membranes. Protein toxins, which use host cell-surface receptors to initiate entry into cells, are attractive vectors to consider given their natural tendency to delivery proteins into specific cells with high efficiency. The paucity of development efforts for toxins as protein delivery vectors stem from early studies, which suggested that delivery was restricted to a select few cargo that were largely unfolded prior to translocation and that the cargo itself greatly diminished the efficiency of translocation of the system. Through careful engineering of the platform, we show that neither of these assertions is true. We show that the diphtheria toxin platform is capable of delivering proteins that are over 100 kDa in size and of varying structures and stability with exquisite efficiency. In fact, to our surprise, we found that diphtheria toxin could deliver the hyper-stable passenger protein mCherry, which we calculated to have a melting temperature greater than 90 degrees under the translocation conditions, suggesting that even folded proteins could be delivered into cells. Through a rigorous set of experiments we trace the misleading early results to effect of cargo on the readout of translocation, rather than the efficiency of translocation. We also provide functional evidence that the delivered cargo is functional. Using a-amylase as cargo we show that cytosolic glycogen is degraded in a dose and time dependent manner.

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Drug delivery across the brain protective barriers

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There are approximately 400 known neural disorders some of which being due to a disruption or failure of the blood brain barrier (BBB) such as, for example: meningitis (an inflammation of the meninges or membranes surrounding the brain and spinal cord), epilepsy (chronic or acute seizures caused by inflammation), multiple sclerosis (MS-a disease of the immune system or/and the breaking down of the BBB in a section of the brain or spinal cord), Alzheimer disease (AD-a disease in which amyloid beta contained in blood plasma enter the brain and adhere to the surface of astrocytes), possibly prion and prion-like diseases such as Parkinson disease (PD) and AD, HIV encephalitis (a precursor of HIV-associated dementia in which latent HIV can cross the BBB inside circulating monocytes in the blood stream) and systemic inflammation (sterile or infectious) that may lead to effects on the brain, cause sickness behavior and induce or/and accelerate brain diseases such as MS and PD. There are currently active investigations into treatments for a compromised BBB. As a consequence of the growing aging population, many such neurodegenerative diseases, cancer and infections of the brain will become more prevalent. Of interest here are those disorders requiring treatment by delivery of drugs across the brain protective barriers. I will review the difficulties inherent in the delivery of drugs across the BBB in the treatment if the above neurological disorders and discuss the mechanisms for drug targeting both “through” and “behind” the BBB. I will also suggest approaches for the enhancement of drug delivery including physiological approaches, chemical and biological delivery and disruption of the BBB system, the use of molecular Trojan horse systems and the various nanoparticle and nano delivering devices.

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Development and transportation pathway of Alpinia galanga oil loaded self-micro emulsifying drug delivery systems (SMEDDS) for fish anesthesia

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Alpinia galangal, an important edible plant in family Zingiberaceae is commonly used in Asian folk medicinal remedies. The essential oil of A. *Galanga* Rhizomes (AGO) has many biological activities e.g., antioxidant, antibacterial, antifungal and anti-inflammatory actions. However, the poor water miscibility of AGO causes the limitation of its clinical use in both human and animals. The alcohol used to dissolve AGO for fish anesthesia always causes hyperactivity in fish. The aim of this study was to solve this problem by developing Self-Micro Emulsifying Drug Delivery Systems (SMEDDS) of AGO. Pseudoternary phase diagrams of AGO were constructed to identify the best AGO-SMEDDS formulation. It was found that the AGO-SMEDDS composed of 20.0% AGO and 53.3% tween 80 and 26.7% ethanol had a mean droplet size of 82 nm after dispersing in distilled water. The anesthetic activity of the developed AGO-SMEDDS in koi (*Cyprinus carpio*) was evaluated in comparison with an AGO ethanol solution on the induction time required to reach the surgical anesthetic stage in which the fish stop all swimming activity and show loss of equilibrium and responsiveness. Results showed that the induction times of the fish receiving 200, 300 and 400 mg/L AGO-SMEDDS were 233, 130 and 112 seconds, respectively. Importantly, AGO-SMEDDS showed significantly higher anesthetic activity than the AGO ethanol solution which showed the induction times of 303, 207 and 167 seconds, with the same dose of AGO, respectively. The transportation pathway of AGO was investigated using a fluorescence microscope. AGO was labeled with Nile red. The brain, gills and skin of fish showed red fluorescent spots without auto fluorescence phenomena compared to unlabeled AGO. This result suggests that the AGO entered the fish via gills and skin and was transported to the brain where the anesthetic effect took place.

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Ultra structural study of the pathogenesis of liver fibrosis in rats

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Liver fibrosis is a significant health problem developed as a response to a wound-healing process in injured liver characterized by excessive deposition of fibers and extracellular matrix. Despite extensive studies, the ultra-structural events are not well elucidated in liver fibrosis. The aim of this study was to clarify the ultra-structural events that govern the ECM deposition and fibrosis progression using dimethyl nitrosamine DMN induced liver fibrosis in rat's model. Two groups of male rats were assigned in this study: Control and DMN. Rats were administered DMN intra-peritoneally (10 mg/kg, 3 days/week for 21 days). Administration of DMN induced significant body weight loss and severe pathological alterations in hepatic cells. All hepatic cells suffered specific changes. The hepatocytes were injured and went through apoptosis. The sinusoidal endothelial cells lost their fenestrae. The Kupffer cells as well as the lymphocytes proliferated and contributed to the inflammation. In addition, the quiescent hepatic stellate cells (HSCs) activated; they lost their retinoid and acquired large nucleus, attained large amount of fibers around it. HSCs were transformed into myo-fibroblasts phenotype synthesized extracellular matrix (ECM) proteins and produced fibrous scar. Furthermore, portal fibroblast PFs proliferated and produced large amount of fibers in portal and periportal area. Lymphocytic infiltration, necrosis, hepatocyte steatosis, cholangiocyte proliferation all these contributed to liver fibrosis in this study. In conclusion, the most distinctive features of the cellular events of hepatic fibrosis in this study were focal deposition of ECM and collagens, primarily in portal and periportal areas as well as bizzare and extensive fibrous appearance of mitochondria in hepatocytes. This guides us to believe that activated portal fibroblasts contributed highly to fibrosis.

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Formulation and pharmacological evaluation of metallic nanoparticles

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In recent research and development there has been prodigious excitement in the nano pharmacological area for the study of nanoparticles synthesis using some natural products. Biological methods have been used to synthesize zinc oxide nanoparticles in presence of medicinally active plants such as *Ocimum tenuiflorum, Azadirachta indica*, etc., and this intention made us to assess the biologically synthesized zinc oxide nanoparticles from the leaf of *Ocimum tenuiflorum* using 1 mM zinc oxide solution. Zinc oxide nanoparticles have been widely used for many applications. In current study the nanoparticles tested for their anti-diabetic activity. Morphology and metal composition of synthesized nanoparticles were determined by characterization techniques. Poly herbal formulation was prepared by proper addition of plant mediated zinc oxide nanoparticles that were prepared from *Ocimum tenuiflorum* and *Azadirachta indica*. The formulation tested for its in vitro anti diabetic activity using α-amylase assay. The strongest activity (at concentration: 25 mg/ml) was shown by the nanoparticles formulation (97.77%) comparatively with crude extract. The outcomes of this study show that the administration of some of metallic nanoparticles may possibly control the postprandial blood glucose ranges and confirm the use of these herbs suggested as a treatment of diabetes in traditional medicine and displayed a good inhibitory activity on amylase.

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Major challenges in formulation development: From the perspective of a developing state

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Reducing the disease burden timely and cost-effectively is one of the prime goals of every national health policy, as health and access to safe, effective, quality and affordable medicine is the basic right of people. According to the World Health Organization (WHO), the world consumption of pharmaceutical products has increased drastically from US$ 70 billion to US$ 1.1 trillion (Since 1975), with a consumption of medicines per capita growing from US$ 17 to US$ 531. Regardless of this increase in world consumption, more than 80% of all pharmaceutical products are consumed by 15% of the world population located in 'developed countries'. In order to mitigate this global health inequity, pharmaceutical industries of developing world need to accelerate the development and production of pharmaceutical products of optimal quality. Formulation development, being a very crucial and lengthy process, involves different pharmaceutical technologies and presents a number of challenges to the pharmaceutical industry of countries like Pakistan, India, Bangladesh, etc. Pakistani pharmaceutical market is of US$ 326 billion. In Pakistan, the major challenges that pharma industry faces while developing a new product are stricter and non-supportive pharma regulations of the national drug regulatory body that discourage new drug development, national insufficiency of research and development in producing active pharmaceutical ingredients (APIs), lack of bioequivalence and clinical trials facilities and inadequate commercial and economic feasibility regarding export of new drugs. Besides these, the complex science of drug designing which require novel technologies and well-trained talent is also a crucial challenge. This study recommend to promote harmonization of regulatory processes by adopting globally harmonized standards, establish targeted capacity-building for quality APIs, train the talent, improve research and development sector, develop bioequivalence and clinical trial facilities and set transparent pricing rules. For Pakistan, it is a high time to improve health and access to quality medicine. The recommendations in this presentation may prove helpful in improving the development rate of safe, effective, affordable and high quality drug formulations.

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Design, formulation and evaluation of transdermal patch of Propranolol using chamomile essential oil as permeation enhancer: *In vitro in vivo* chapter

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Statement of the Problem: Skin permeation enhancement technology is a rapidly emerging field which would expressively increase the number of drugs which is suitable for transdermal drug delivery. Transdermal drug administration route offers many benefits over oral administration of drugs and has stimulated research to find ways to overcome the barrier function of the skin by use of various enhancers' approaches. The exploration for the ideal skin penetration enhancer has been the emphasis of significant research effort over a number of eras. Many potent enhancers have been revealed, but in most of the cases, their effects are associated with toxicity.

Methodology: Physiochemical evaluations like majorly, drug content and aging, moisture uptake and thickness were performed to rationalize the suitability and pertinence of the formulation. *In vitro* and *ex vivo* and *in vivo* studies were carried out using Franz diffusion cell using albino rabbits (pharmacokinetics). In vitro permeation studies demonstrated a significant enhancement with chamomile essential oil.

Findings: Formulation with 10% chamomile essential oil exhibited the best permeation of the model drug evidenced by kinetic parameters. The pharmacokinetic parameters, such as the $C_{max,}$ $T_{max,}$ MRT, AUCo-t and T1/2 derived from transdermal administration differed significantly ($p<0.05$) from those estimated from oral administration. The C_{max} of model drug after transdermal administration of optimized patch formulation was found to be 88.37±2.3 µg/ml and the plasma concentration was maintained for 36 hours which was in good agreement with the reported plasma levels of model drug reported in published clinical studies. In variance to oral delivery well sustained activity was observed over a period of 24 hours after transdermal administration.

Conclusion & Significance: Taking together, the transdermal patch using indigenous natural chamomile essential oil can be successively used to achieve better patient compliance in contrast to the oral conventional tablets in pharmaceutical industries.

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Chitosan hydrogel based nanocomposite system with self-healing ability: Films and patches

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Introduction & Aim: Bio-polymeric hydrogel system prepared from chitosan cross-linked with glycerol possesses the self-healing ability, which enables this fantastic hydrogel material to form smooth films or coating. By successful utilization of this self-healing ability possessed by this hydrogel material we have fabricated different types of nanocomposite hybrid biomaterials.

Methods: In the first approach chitosan nanocomposite hydrogel was fabricated by using Carbon dots (CDs) synthesized from commercially available Assam CTC tea. Then a composite nanomaterial was also synthesized by coating the surface of graphene oxide by the iron oxide nanoparticle and this composite nanomaterial was used to fabricate chitosan-iron oxide coated graphene oxide nanocomposite hydrogel films. This chitosan based hydrogel system was also used to fabricate a kind of super absorbent patch using cotton wool. We also modified the patch by incorporating graphene oxide (GO) into this hydrogel system. The films and the patches were fabricated by gel casting technique and by the compression molding technique, respectively.

Results & Conclusion: The films obtained from chitosan-CDs nanocomposite hydrogel system showed UV-blocking ability along with the improved mechanical and thermal property. Chitosan-iron oxide coated graphene oxide nanocomposite hydrogel films are robust along with another interesting property, the antimicrobial activity. Cotton based patches after loading GO showed antimicrobial activity as well as efficient wound healing ability when tested in animal model and thus can serve as a bandage material. The main advantage of such patches is that any type of chemicals, drugs, nano or micro particles can be loaded in it as per requirement. Since chitosan is a bio-polymer having the inherent property of biodegradability and biocompatibility, so such type of films and patches fabricated from chitosan based hydrogel system may find high potential application in the bio-medical as well as food packaging industry. The patches may have application in the textile industry as well.

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Synthesis, characterization and functions of biomass eugenol based helical polymers

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Eugenol (4-allyl-2-methoxyphenol) is a main component (80 wt. %) of clove oil, which is mainly produced in Indonesia. It is widely used as perfumes, antioxidants, drugs, foods and taste items. Eugenol is inexpensive natural resource, which carries reactive phenolic hydroxyl and allyl group and is therefore expected as a key component for environmentally friendly organic synthetic chemistry. On the other hand, biopolymers, exemplified by proteins and DNA, adopt three-dimensionally well-ordered structures, which indispensable for the maintenance of living systems. Although the formation of such regular secondary structures is obviously entropically unfavorable, protein and DNA construct well-arranged helical structures, which are stabilized by hydrogen bonding. The energy of hydrogen bonding compensates the entropic cost. This is the strategy of nature to provide three-dimensionally well-ordered biopolymers. The incorporation of naturally derived eugenol in addition to amino acids into polyacetylene is interesting from the view point of green, sustainable chemistry and polymerization chemistry. This paper is report the synthesis of polymers from eugenol as starting material and examination of polymerization with (nbd) $Rh+[\eta^6\text{-}C_6H_5B\text{-}(C_6H_5)_3]$ catalyst, which is effective to polymerization mono substitutes acetylene. Characterization of polymers can be soluble in common organic solvent and can be form thermo responsive material so can be function as smart or intelligent material.

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Tunable angle dependent/independent structural color of hydrogel by modulating lamellar structure

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In this paper, we report tunable angle dependence of stimuli responsive photonic hydrogels containing multi-lamellar structure of alternative rigid polymeric platelets of high refractive index and ductile polymer matrix of low refractive index. Therefore, the refractive index variation and periodic lamellar spacing satisfies the Bragg's law to diffract visible light and the gel exhibits magnificent structural color. The packing geometry of periodic multi-lamellae of the photonic crystal is fabricated from flat-lamellae to cylindrical lamellae. 1D photonic crystalline lamellar sheet domains forms a rectangular sheet hydrogel in which the lamellar sheets aligned periodically parallel to the top surface. On the other hand, cylindrical rod-like colored gel is achieved by arranging periodic multi-cylinder packing of the lamellar domains. The cylindrical photonic hydrogel exhibits angle independent color whereas the sheet hydrogel reveals strong angle dependency. A rocking curve has been constructed to justify the tunable angle dependency of the multi-lamellar hydrogel. The tunable angle dependency of this photonic material could potentially benefits light modulation, visualization, optical sensing and display technologies.

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Interfacial construction and multi-scale structural evolution in nanocomposites

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We first report the construction of hybrid shish-kebab (HSK) superstructure in low-crystallinity elastomer nanocomposites with incorporation of carbon nanotube bundles (CNTBs). With strong interfacial adhesion, the tensile strength of olefin block copolymer (OBC)/CNTBs nanocomposites was tripled from 7.34 MPa to 24.11 MPa. With innsitu synchrotron small angle X-ray scattering (SAXS) and wide-angle X-ray diffraction (WAXD) as well as in situ Raman spectra, the multi-scale structural evolution was thoroughly studied. The formation of HSK leads to lower lamellar density, exhibiting remarkably increased long period. Unlike that in neat OBC, the lower density of crystal lamellaes in nanocomposites does not dominate the evolution of long range orderness at low strain regions, the long period of nanocomposites exhibit an inversely increasing trend. With addition of CNTBs, the orientation behavior still follows the slip-link theory. With HSK acting as larger but fewer physical junctions, the chain connectivity of the soft and hard segments in OBC chains in nanocomposites is lower than that in neat OBC, it is less necessary for HSK to adjust their orientation status along the stretching direction. Thus the orientation factor of orthorhombic crystals at low strain regions is lower than that of neat OBC. The mesoscopic structural evolution of CNTBs can be directly revealed by the downshift trend of the Raman G-band of CNTBs in nanocomposites, which reveals the axial deformation of CNTBs. The downshift can reach a maximum of 10.2 cm^{-1} and the downshift under axial deformation also confirm to the slip-link theory and is consistent with the orientation status of HSK superstructure.

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Evaluation of therapeutic potential of folk plants extracts against Acanthamoeba *in vitro*

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Statement of the Problem: Acanthamoeba is an opportunistic protozoan pathogen and one of the most prevalent organisms in our natural environment (i.e., air, soil and water). It is recognized to cause fatal brain infection (*Granulomatous encephalitis*) and eye infection (blinding keratitis). Treatments for both infections are problematic because of the amoebic cysts resistance to therapeutic agents. That is why there is no effective anti-amoebic drug available to date. The purpose of the present study was to evaluate in vitro strength of plants extracts on the viability and biological properties of *Acanthamoeba castellanii* (T4 genotype) and its cytotoxic effects on human corneal epithelial cells (HCEC).

Methodology & Theoretical Orientation: Using HCEC, adhesion, cytotoxicity and amoebicidal, amoebic growth assays were performed.

Findings: Normally, Acanthamoeba exhibited >90% binding and >80% cytotoxicity to HCEC cells which was remarkably inhibited by plant extracts to >70 and 60% respectively. It was also observed that extracts (ranging from 0.1 to 1.5 mg/ml) exhibited amoebicidal effects, i.e., >50% of trophozoites were killed at 1.5 mg/ml within 1 hour. However, the residual amoeba remained static for quite some time. Furthermore, extracts also inhibited >50% amoeba numbers up to 7 days during growth assay. Furthermore, plant extracts (1 to 30 mg/ml) exhibited amoebicidal effects against Acanthamoeba cysts. Furthermore, Acanthamoeba encystment was also inhibited in concentration dependent manner with maximum inhibition at 2 µg/ml after 48 hours. Among all Peganum harmala seed extracts showed optimal activity against amoeba. Our results confirmed that extracts have toxic effects against both cysts and trophozoite.

Conclusion & Significance: Overall, we reported for the first time that selected plant extracts exhibited inhibitory effects on biological properties of Acanthamoeba without any toxic effects on HCEC cells in vitro.

Recommendations: Further experiments are required with purified fractions of plant extracts to identify the active ingredients and to elucidate the mechanism of action of the effective compounds both in vitro and in vivo which may provide a new series of chemotherapeutic agents.

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Sustained Release and Skin Permeability Enhancement of Pentazocine by Proniosome derived Niosomes and Niosomal Gel

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Proniosomes (PN) are the dry water soluble carrier systems that may enhance the oral bioavailability, stability and topical permeability of therapeutic agents. The low solubility and low oral bioavailability due to extensive first pass metabolism make Pentazocine as an ideal candidate for oral and topical sustained release delivery. The present study was aimed to formulate the PNs by quick slurry method that are converted to niosomes (liquid dispersion) by hydration, and subsequently formulated to semisolid niosomal gel. The PNs were found in spherical shape in the SEM and stable in the physico-chemical and thermal analysis (FTIR, TGA and XRD). The quick slurry method produced high recovery (>80% yield) and better flow properties (θ=28.1-37.4°). After hydration, the niosomes exhibited desirable entrapment efficiency (44.45-76.23%), size (4.98-21.3µm) and zeta potential (-9.81mV to -21.53 mV). The in vitro drug release (T100%) was extended to more than three half-lives (2-4 hrs) and showed good fit to Fickian diffusion indicated by Korsmeyer-Peppas model (n=0.136-0.365 and R¬2=0.9747- 0.9954). The permeation of niosomal gel was significantly enhanced across rabbit skin compared to the pure drug-derived gel. Therefore, the PNs are found promising candidates for oral as bioavailability enhancement and sustained release for oral and topical delivery of pentazocine.

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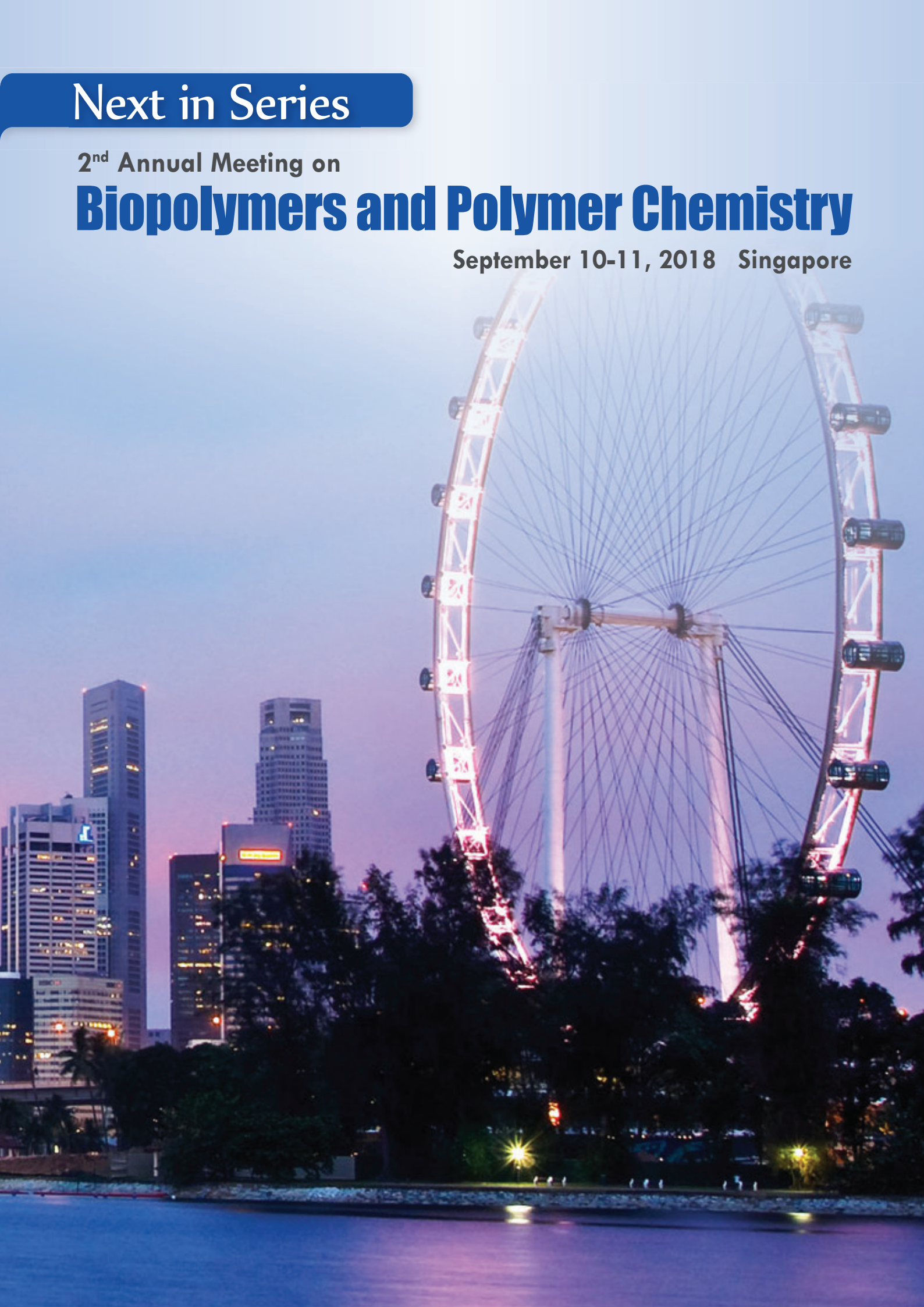
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