OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Materials Science & Engineering

October 7-9, 2013 Hampton Inn Tropicana, Las Vegas, USA

Multifunctional materials for electronics and photonics

Federico Rosei

University of Quebec, Canada

Abstract

The bottom–up approach is considered a potential alternative for low cost manufacturing of nanostructured materials [1]. It is based on the concept of self–assembly of nanostructures on a substrate, and is emerging as an alternative paradigm for traditional top down fabrication used in the semiconductor industry. We demonstrate various strategies to control nanostructure assembly (both organic and inorganic) at the nanoscale. Depending on the specific material system under investigation, we developed various approaches, which include, in particular: (i) control of size and luminescence properties of semiconductor nanostructures, synthesized by reactive laser ablation [2]; (ii) we developed new experimental tools and comparison with simulations are presented to gain atomic scale insight into the surface processes that govern nucleation, growth and assembly [3-7]; (iii) we devised new strategies for synthesizing multifunctional nanoscale materials to be used for electronics and photovoltaics [8-22].

Biography

Federico Rosei holds the Canada Research Chair in Nanostructured Organic and Inorganic Materials since 2003. He is Professor and Director of Institut National de la Recherche Scientifique, Énergie, Matériaux et Télécommunications, Université du Québec, Varennes (QC) Canada. He received MSc and PhD degrees from the University of Rome “La Sapienza” in 1996 and 2001, respectively.

Dr. Rosei’s research interests focus on the properties of nanostructured materials, and on how to control their size, shape, composition, stability and positioning when grown on suitable substrates. He has extensive experience in fabricating, processing and characterizing inorganic, organic and biocompatible nanomaterials. He has published over **150** articles in prestigious international journals (including *Science*, *Proceedings of the National Academy of Sciences*, *Advanced Materials*, *Angewandte Chemie* Int. Ed., *Journal of the American Chemical Society*, *Advanced Functional Materials*, *Nanoletters*, *ACS Nano*, *Biomaterials*, *Small*, *Physical Review Letters*, *Applied Physics Letters*, *Physical Review B*, etc.), has been invited to speak at over **145** international conferences and has given over **145** seminars and colloquia in **39** countries on all inhabited continents. His publications have been cited over **3300** times and his H index is **32**.

He is Fellow of the American Association for the Advancement of Science, Fellow of the Royal Society of Chemistry (UK), Fellow of the Institute of Physics, Fellow of the Institution of Engineering and Technology, Fellow of the Institute of Materials, Metallurgy and Mining, Fellow of the Institute of Nanotechnology, Senior Member of the IEEE, Member of the Global Young Academy and Member of the Sigma Xi Society.

He has received several awards, including the FQRNT Strategic Professorship (2002–2007), the Tan Chin Tuan visiting Fellowship (NTU 2008), the Senior Gledden Visiting Fellowship (UWA 2009), Professor at Large at UWA (2010–2012), a Marie Curie Post-Doctoral Fellowship from the European Union (2001), a Canada Research Chair since 2003 (renewed in 2008 for a second five year term) a Friedrich Wilhelm Bessel Award from the Alexander von Humboldt foundation and the Rutherford Memorial Medal in Chemistry from the Royal Society of Canada.