J Material Sci Eng 2014, 3:3
http://dx.doi.org/10.4172/2169-0022.S1.017

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference and Exhibition on
Materials Science & Engineering
October 06-08, 2014 Hilton San Antonio Airport, USA

Electrospun nanofibers as next generation materials with improved air filtration performance

Subramanian Sundarrajan[1,2], **Kwong Luck Tan**[1], **Soon Huat Lim**[1] and **Seeram Ramakrishna**[2]
[1]Institute of Technical Education College East, Singapore
[2]National University of Singapore, Singapore

Activated carbon and fiberglass are the two mostly studied materials in air filtration industry due to their good performance with associated low cost. The advancement in the field of nanoscience and nanotechnology produced materials with improved properties than conventional materials. Nanofibers are one of the nanotechnology products, which have been explored for applications such as healthcare, water, energy, electronics, catalysis, environmental, air filtration, bioengineering and biotechnology. Pores and pore size distribution of nanofibers can be easily tunable. Recently, they have been explored in various air filtration products such as high efficiency particulate absorption (HEPA) filters and so on. In this talk, various nanofibers that are electrospun and deposited on HEPA filters, process variation, additives addition, and their performances, challenges faced and their potential application in air filtration industry will be presented.

Biography

Subramanian Sundarrajan has completed his PhD at the age of 29 years from Madras University and Postdoctoral studies from National University of Singapore, Department of Mechanical Engineering. He is working as a Senior Lecturer at ITE, Singapore. He has published more than 70 papers in reputed journals and serving as an Editorial Board Member of repute. He joined the NUS in 2003 where he is working on electrospinning of nanofibers, metal oxide nanoparticles and nanofibers for air, water and tissue regeneration applications. He is one of the cited Researchers in materials science. He authored 3 books chapters and ~70 ISI papers with 14 as H-index. He has written many invited review articles on air, water and tissue engineering applications. He is reviewing papers for many international reputed journals.

sundarnus1@gmail.com

First-principles design of materials for energy applications first-principles design of materials for energy applications

Su-Huai Wei
National Renewable Energy Laboratory, USA

Materials design using first-principles techniques is one of the ultimate goals in computational materials science. Due to the recent advances in first-principles electronic structure theory and computing power, it is now possible to perform knowledge-based computational design of materials with unique optical, electrical, magnetic, and/or thermal properties that are tuned to specific green energy related applications. This approach has now become a vital tool in accelerating scientific discovery of energy materials. In this presentation, selective works will be discussed to illustrate how computational methods can be used to understand and design functional energy materials, including earth-abundant PV materials; transparent conducting oxides; oxides for H_2 production through PEC water splitting; materials for hydrogen, electricity, or thermal energy storage; and materials for solid state lighting.

Biography

Su-Huai Wei received his BS in Physics from Fudan University in 1981 and PhD in Physics from the College of William and Mary in 1985. He joined the National Renewable Energy Laboratory in 1985 and is currently a Principal Scientist and Manager of the Theoretical Materials Science Group. His research is focused on developing electronic structure theory of materials, especially for semiconductors and energy related materials. He has published more than 370 papers in leading scientific journals, including more than 66 in Physical Review Letters with an H index of 81. He is a Fellow of the American Physical Society.

suhuai.wei@nrel.gov