Preface

The smallest parts of the mater are referred as nanomaterials and the materials when put to use are known as functional materials. The discovery of these nanomaterials is widely acknowledged as a major triumph of human ingenuity in modern times. This discovery has led to the emerging field of nanotechnologies, which is paving the way for a new technological revolution. Such developments may usher in new industrial revolutions, capable of radically transform almost (everything) in all industrial sectors in the coming years. Most of the industries have already begun to establish a significant share in the global market and are expected to exert a major beneficial impact on every sphere of life.

Among the top challenges across the globe is of energy and environment. They are of incredible magnitude. Solving problems, like energy which is the largest enterprise of humanity on the horizon, would go far toward solving many of humanity's other most pressing problems, such as food and water supplies, environmental degradation, and poverty because they are so directly affected by the availability of energy.

Environmental nanotechnologies have the possibility to contribute to economic growth and innovation while at the same time allowing sustainable development and protecting the environment. Various applications of nanotechnologies for environmental remediation have been successfully demonstrated at the laboratory scale but, in the majority of cases, these still require verification of their efficacy and safety in the field. Conventional remediation technologies have so far have shown only limited effectiveness in reducing the levels of pollutants in the air, water, and soil and in responding to the challenges of major cleanup operations. Present day filtration and purification plants used for supplying drinking water generally achieve only partial success because the active materials are of limited efficiency. However, because of their much greater specific surface area, nanoparticles are able to perform significantly more effectively as filtration media than larger particles with the same chemical composition.

Materials with small dimensions increase the strength as well as enhance efficiencies of monitoring devices, remediation of environmental pollution and renewable energy production. Nanoscale materials will make the products better in terms of functionality, weight savings, less energy consumption and a cleaner environment. Choosing the right nanoscale materials is one of the key parameters for the future direction of nanotechnology. There is no doubt that nanotechnology will continue to be develop, be a benefit to society and improve the energy efficiency and environment in various ways. Shortcomings always exist when new unproven technology is released and hopefully will be vanish soon.

Thus, this special issue on the ‘Functional Nanomaterials for Energy and Environmental Applications’ aims to present the current research and to identify future priority and directions in design and applications for energy and environment.

Lead Editor
Dr. M.A. Shah, Department of Physics, National Institute of Technology, Srinagar. The author can be reached at: sashraf@kau.edu.sa for comments and suggestions.

Guest Editors:

Dr. M.A.Shah	**Dr. M. A. Bhat**	**Prof.J. P Davim**
mashahnit@gmail.com	aminbio3@gmail.com	pdavim@ua.pt

Editors

Editorial Board

Dr. M. M. Shaijumon

School of Physics
Indian Institute of Science Education& Research (IISER),
Thiruvananthapuram
CET Campus, Kerala 695016, India
Email: shaiju@iisertvm.ac.in
Tel: +91-471-2599402; Fax: +91-471-2597427
Web: http://iisertvm.ac.in/~shaijumon

Dr. Mohd Ikram
Department of Physics,
National Institute of Technology,
Srinagar-190006
India
E.msail: mikram@gmail.com

Dr. B. B. Kale,
Scientist-F Head, Nanocrystalline Materials,
Centre For Materials For Electronics Technology (C-MET),
Govt of India,
Panchawati off Pashan Road, Pune -411008
Phone : 091 20 25899273/25898141
email : kbbb1@yahoo.com/ bbkale@cmet.gov.in

Dr.N.Vijayan,
Scientist F
Room No.46, X-Ray Analysis and Crystal Growth Section
National Physical Laboratory (CSIR-GOVT. OF INDIA)
Dr. KS Krishnan Road, New Delhi-110012
Ph.No. +91-11-45608263/8634/8261/8295
FAX: +91-11-45609310
Mob. 09868389634
E-mail: vjnphy@yahoo.com ;
Website: www.nplindia.org

Dr. Anima Nanda
Professor and Head
Department of Biomedical Engineering,
Sathyabma University,
Rajiv Gandhi Salai, Chennai-600119
India
e.mal: animananda72@gmail.com

Dr. G. K. Dash, Ph. D, D. Sc, FIC, PGDM, PGDC & MIS
Professor, Faculty of Pharmacy,
Universiti Kuala Lumpur,
Royal College of Medicine Perak,
No.3 Jalan Greentown,
30450 Ipoh, Perak Darul Ridzuan, Perak, Malaysia.
Mobile: 0060105491614
Email: gk_dash@rediffmail.com

Dr. Khursheed Ahmad
Department of Physics,
Govt, Degree College, Anantnag Kashmir
IndiaE.mail: drkhursheeda@gmail.com

DR. B. K. NAYAK, FNRS
ASST. PROFESSOR
Dept. of Plant Biology and Biotechnology
K. M. Centre for Post Graduate Studies (Autonomous)
Airport Road, Lawspet,
Pondicherry - 605 008, India
Mobile:09443653844
Email:bijuknayak@gmail.com

Prof. N. Irabanta Singh
Dean, School of Life Sciences
Manipur University
Indo-Myanmar Road, Canchipur - 795003
Imphal, Manipur, India
Mobile: 09436280447
Email: irabanta.singh@gmail.com

Dr. Mehraj-ud-din Naik
Postdoctoral Research Associate
Dept. of Physics "Galileo Galilei"
University of Padova
Padova, 35131, Italy
E-mail: mehrajuddin.naik@unipd.it
Mob. +39-3894708815

Dr. A. H. Wani
P.G. Department of Botany,
University of Kashmir
Kashmir – 190006,
India
Mobile: 0091-9906520772,
E-Mail: ahamidwani@yahoo.com

Dr. Mir Faizal
Department of Physics,
National Institute of Technology, Srinagar -190006
India
E.msail: mirfaizalmir@gmail.com

Dr. Mohamed Bououdina
Director: Nanotechnology Centre
Manager: College of Science Central Labs
University of Bahrain
Tel: +973 1743 7917
Fax: +973 1744 9671

Dr. M. Saravanan Ph. D., PDF
Associate Professor
Institute of Biomedical Sciences
College of Health Sciences
Mekelle University
Tel: +251344416696
Fax: +251344416681
P.O.Box: 1871
Mekelle, Ethiopia
Email: bioinfosaran@gmail.com

Prof. K. L. Tiwari
Dean, Faculty of Life Science
Head, Department of Biotechnology
Guru Ghasidas Vishwavidyalaya (Central University)
Koni- 495009, Bilaspur, (C.G.), India,
Mobile: 094252-07274
Email: kishan_tiwari37@hotmail.com

Dr. Chandi Charan Rath
Reader, P.G. Department of Botany
North Orissa University
Baripada-757003, Odisha, India
Mobile: 09438194922
E-mail: chandicharanrath@yahoo.com

Dr. Sanghamitra Khandual
Investigadora, Titular-a
Dept-Biotecnologia Industrial
Centro De Investigacion Y Asistencias En Tecnologias
Y Desño De Estado De Jalisco.
Calle-avenida Normalistas No. 800
Col-colinas de la normal
Ciudad-Guadalajara
Estado-Jalisco, Pais-Mexico, C.P-44270
Email: mita@ciatej.net.mx