



Dipartimento di  
Scienze Chimiche

Graduate Course in  
**Science and Engineering of  
Materials and Nanostructures**



Dipartimento di Fisica e  
Astronomia "G. Galilei"

**Seminar**  
November 25, 2019 – 15:00  
Aula Voci – Dip. di Fisica e Astronomia "G. Galilei"

**Prof. Devesh K. Avasthi**  
Amity Institute of Nanotechnology, Amity University, Noida-201313

## **Nanostructures for energy and environmental remediation**

Nanostructures are of great interest due to their unique properties. The role of nanomaterials and nanocomposites for the societal needs is of wide interest. I will brief our recent research activities on using the nanostructured materials for energy [1], photo-splitting of water [2], photo catalytic materials for water remediation [3] and nanobio-sensors [4,5]. Ion irradiation due to their unique property of depositing large energy density in localized region [6] has been exploited in creating nanostructures and engineering the materials for energy

1. M. Bala et al., ACS Applied Energy Materials (In Press); M. Bala et al., Journal of Applied Physics 121 (2017) 215301.; M. Bala et al., Phys. Chem. Chem. Phys. 17(2015)24427,
2. Anuradha Verma et. al., Journal of Power Sources 315(2016)152-160.
3. Mahima Sharma et al., Journal of Chemical Engineering (2019).
4. N. Chauhan et al., ACS Applied Materials & Interfaces 10(2018)30631.
5. C. Tyagi et. al., Biomedical Physics & Engineering Express 4(2018)065002.
6. D. K. Avasthi and G. K. Mehta, 'Swift heavy ions in materials engineering and nanostructuring', Springer 2011.



**BIO:** Prof. Devesh Kumar Avasthi is Director of Amity Institute of Nanotechnology and Director of ADET (Directorate of Engineering and Technology) at Amity University Noida Campus. He received his Ph.D. from Punjab University Chandigarh in 1982. After serving three and half year in Defence Research Development Laboratory, Hyderabad as Scientist, he joined Nuclear Science Centre, currently known as Inter University Accelerator Centre (IUAC) located in Jawaharlal Nehru University, Delhi in February 1986. He superannuated as Scientist H, Head of Materials Science and Radiation Biology at IUAC Delhi in December 2015. He joined Amity University in March 2016.

Dr. Avasthi has more than 500 publications and has a H index of 46. He authored a book on 'Swift heavy ions in materials engineering and nanostructuring' by Springer, several chapters for books and edited several conference proceedings for international journals. He is fellow of Institute of Physics, UK. He is founder president of Ion Beam Society of India.

Prof. Giovanni Mattei  
Coordinator of the Graduate Course