

25TH NOVEMBER 2025, 17:15
SEMINAR ROOM

Nanostructured materials play a significant role in the advancement of scientific research due to their unique physicochemical properties. This lecture will be focused on the development of innovative synthesis techniques, characterization, physicochemical properties and applications of two different groups of colloidal nanostructured vanadate materials. The first group consists rare-earth orthovanadates (REVO_4) such as GdVO_4 , NdVO_4 , DyVO_4 , SmVO_4 , while the second group consists of bismuth vanadate (BiVO_4). The REVO_4 have proved to be good host lattices for optically active trivalent lanthanide (Ln^{3+}) ions giving strong luminescence assigned to absorption of the vanadate groups and the efficient energy transfer between host lattice and Ln^{3+} ions. On other hand, the BiVO_4 possesses non-toxic nature, distinct physical and chemical properties and a good response to visible-light excitation showing great photocatalytic features. Both, undoped and Ln^{3+} -doped REVO_4 have been extensively studied as an important class of materials for different applications such as fluorescence temperature sensors, luminescent probe for hydrogen peroxide and for enzymatic sensing of glucose, for multifunctional deep-tissue photothermal therapy and electromagnetic interface shielding.

In collaboration with CNR - Institute of Photonics and Nanotechnologies

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Synthesis, Physicochemical Properties and Applications of Nanostructured Vanadate-Based Materials

DII SEMINAR

