Luminescent upconversion nanoparticles for sensing and bioimaging

Dr. Ashwini Kumar Sharma

Ashwini Kumar is working as a post-doctorate researcher under Prof. J.J.Terblans and Prof. Hendrik C Swart at Department of Physics, University of the Free State, Bloemfontein, South Africa. He joined UFS in May 2015. He has completed his PhD research work on topic entitled “Development of rare-earth activated alumino-silicate based nanophosphors for solid state lighting” from Department of Metallurgical & Materials Engineering, Visvesvaraya National Institute of Technology (VNIT), Nagpur, India under the supervision of Dr. S.J.Dhoble, Dr. Jatin Bhatt and Dr. Dilip R. Peshwe. Basically the research work emphasis on synthesis and characterization of luminescent nanomaterials (phosphors) for possible application in light emitting diode material. He has published several research papers in SCI journals and currently working on upconversion materials for bioimaging, display technology, Thin Films, Quantum Dots, Electronic Nanomaterials and Devices: Characterization and Processing. He has knowledge of simulation and fitting of XRD patterns by Rietveld Refinement. He has over Five year’s hands on experience with; X-ray Diffractometer (PANalytical), Scanning Electron Microscope (JEOL 6380A),Energy Dispersive Spectroscope (Bruker),Thermo gravimetric /Differential Thermal Analyzer (Perkin Elmer Diamond TG/DTA), Fourier Transform Infra-Red Spectrometer (Perkin Elmer Spectrum One), Differential Scanning Calorimeter (METTLER-TOLEDO), Fluorescence Spectrofluorometer (Shimadzu RFPC-5301), Thermo-luminescence characterization (TL-Nucleonix), Particle Size Analyzer (Horbia Scientific LA 300 System).

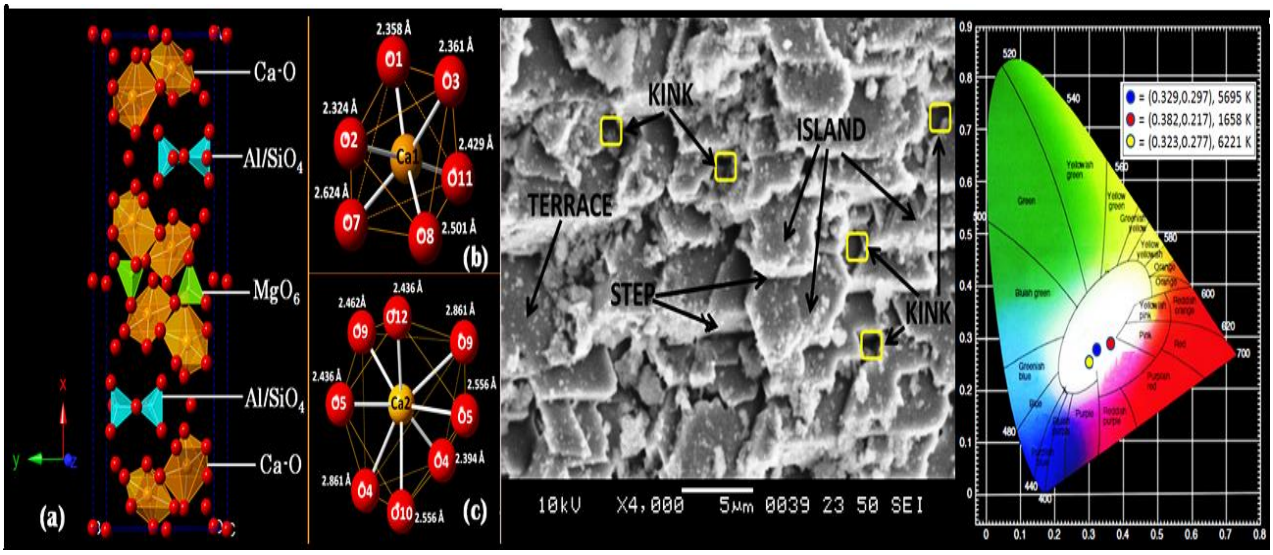

Figure: Unit cell polyhedral crystal structure of $Ca_{20}Mg_3Al_{26}Si_3O_{68}$, SEM micrograph of prepared matrix showing faceted and layered formation phenomena, CIE chromaticity diagram.