

**TITLE**

**Synthesis and characterisation of electrospun europium doped titania nanofiber for light emitting applications**

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Most of the recent work on electrospinning has focused on trying to understand the fundamental aspects of the process in order to gain control of fiber morphology and structure or on determining appropriate conditions for electrospinning of various polymers. These composites are expected to be applied for scratch and abrasive resistant hard coating, nonlinear optical materials, contact lenses and reinforcement of elastomers and plastics.  $\text{Eu}^{3+}$  doped titania ( $\text{TiO}_2:\text{Eu}^{3+}$ ) nanofibers were synthesized by the electrospinning technique. The Electro spinning apparatus was operated at 20kV. Samples were calcined at 500°C in air. The structural and spectral information of the sample was characterized by scanning electron microscopy (SEM), x-ray diffraction (XRD), Raman spectrum, photoluminescence (PL). SEM reveals that the nanofibers have the diameter 49.5nm. XRD measurements show that the crystal structure transforms from anatase to rutile phase with the increasing of calcined temperature. The Luminescence measurements were performed using a laser excitation source at 395 nm. All electro spun materials consisted of randomly oriented nanofibers. The presence of europium shifted toward higher values either the crystallization temperature of anatase and the anatase to rutile phase transition. The doped samples show a strong luminescence of  $\text{Eu}^{3+}$  ions. The emission spectra are dominated by the  ${}^5\text{D}_0 \rightarrow {}^7\text{F}_2$  emission, suggesting a notable distortion around the  $\text{Eu}^{3+}$  ions. The broadening of the bands points occurs due to the presence of a relevant inhomogeneous disorder around the  $\text{Eu}^{3+}$  sites.

**Biography**

Sanya Aezaz is pursuing her M.Tech in Laser and Electro-Optical Engineering at Anna University, Chennai, India. She has also completed her B.E in Electronics and Communication Engineering at, Anna University, Chennai, India