The Orange-Red Emitting Mn(III) Schiff Base Complex: Crystal Structure, Luminescence Study and Investigation of Its Usage for Nanofiber-Based OLEDs

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Recently, Schiff base ligands and their metal complexes have gained attractive as organic photovoltaic materials since their use as potential substitute for dye-sensitized solar cells (DSSCs) [1,2]. Besides that, impressive progress has been made in the photo-physical and optoelectronic applications of these complexes, because they exhibit photoluminescence (PL) as well as electroluminescence (EL) and these quality make them to have potential applications in developing energy-efficient, low-cost, full colour and flat panel OLED displays [3-5]. In this study, new Mn(III) Schiff base complex was synthesized with solvothermal method with tridentate Schiff base ligand and characterized by single crystal X-ray diffraction and solid–state luminescence properties. In addition, electrospinning process was used to prepare composite Mn-Nano-fibrous mats from a poly(methyl methacrylate) (PMMA) and polyacrylonitrile (PAN) solution. The luminescence properties of Mn(III) complex and Mn-Nano-fibrous have been investigated at room temperature in the visible regions upon excitation at λ_{ex} = 349 nm. The complex exhibits a strong orange-red luminescence emission in the solid state at room temperature as seen from the (CIE) chromaticity diagram, and hence this Mn-Nano fibrous material may be a promising orange-red OLEDs developing electroluminescent material for flat panel display applications.

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