

Rare-earth based photoluminescent materials

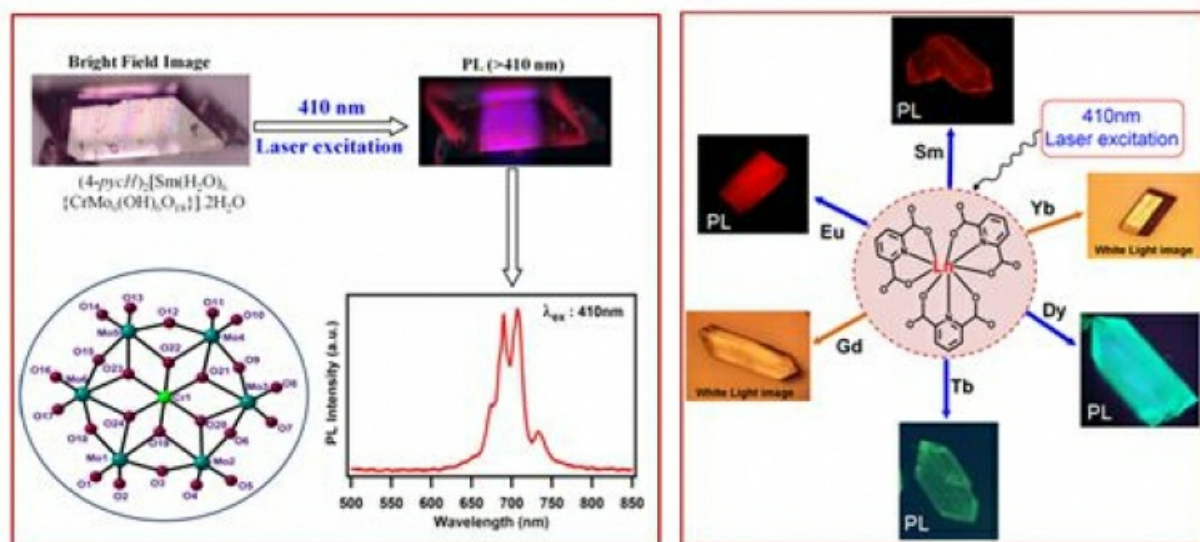
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Rare-earth ion based coordination solids with distinctive optical properties such as long luminescence life times and sharp emission bands are prospective materials for application in OLEDs, lasers and sensors. Recently, design of new coordination solids (coordination polymers and metal organic frameworks) are sought with suitable ligands as it appears to increase the quantum efficiency of lanthanide ions through synergetic effects and prevents the coordination of solvent molecules that can quench its emission. In our work, we adopt a crystal engineering approach to obtain new photoluminescent materials based on aminocarboxylate based ligand. In one series, the structure is dominated by a molecular cluster, {CrMo₆O₂₄}ⁿ⁻ that exhibits ruby-like red emission which acts as a ligand to coordinate rare-earth ions. In another series, the dipicolinate ligand strongly complexes with rare-earth ions which control the resulting structures. In this poster, we address the photoluminescent behaviour of both these types of coordination solids.

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