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STRUCTURAL PROPERTIES OF Co²⁺ ION DOPED CALCIUM CADMIUM PHOSPHATE HYDRATE NANOPHOSPHOR

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Abstract. Inorganic nanophosphor materials have captivated the world wide attention into the field of solid state lighting emission displays, plasma display panels, light emitting diodes, IR quantum counters, scintillation etc. Nanotechnology is the foremost superior in the development of phosphors with definite size and shape. Alkali and alkaline earth phosphates are the promising candidates for the inorganic phosphor materials. Manufacturing of nano-inorganic materials gained much interest due to their advance lighting applications.

In this work, novel Co²⁺-doped Calcium Cadmium Phosphate hydrate nanophosphor (CaCdPH-Co²⁺) was synthesized by a traditional solid state reaction technique. The synthesized sample was characterized by Powder XRD, SEM equipped with EDX and FTIR techniques. The hexagonal phase of the prepared CaCdPH-Co²⁺ sample was confirmed by x-ray diffraction results, and the average crystallite size was evaluated. FTIR demonstrated the formation of vibrational modes ascribed to phosphate molecules and other hydroxyl groups. The morphologies of the CaCdPH-Co²⁺ nanophosphor were investigated by scanning electron microscopy.