

# Some physical properties of $\text{ZnAl}_2\text{O}_4: \text{Cr}^{3+} (\text{Co}^{2+})$ powders prepared by hydrothermal method

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**Abstract:**  $\text{ZnAl}_2\text{O}_4: \text{Cr}^{3+} (\text{Co}^{2+})$  nanopowders were prepared by hydrothermal method and annealed at various temperatures. The samples were characterized by X - ray diffraction, transmission electron microscopy, photoluminescence and photoluminescence excitation spectra. The results show that crystal structure and optical properties of the samples were affected by heat treatment regime. When annealing temperature increased, crystal structure of the samples became better. Optical spectra of the ions  $\text{Cr}^{3+}$  are sensitive to crystal structure of the host lattice. Electron transitions difference in absorption and radiation processes between the samples  $\text{ZnAl}_2\text{O}_4: \text{Co}^{2+}$  unannealed and annealed at high temperature was investigated. © 2009 IOP Publishing Ltd.

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