

One-step *In-situ* Hydrothermal Fabrication of Cobalt-doped ZnO/CdS Nanosheets for Optoelectronic Applications

Lakshmiprasad Maddi ¹, Khidhirbrahmendra Vinukonda ², Thirumala Rao Gurugubelli ^{1,*}
and Ravindranadh Koutavarapu ^{3,*}

¹ Physics Division, Department of Basic Sciences and Humanities, GMR Institute of Technology, Rajam – 532 127, Andhra Pradesh, India

² Department of Physics, Sri GCSR Degree College, Rajam – 532 127, Andhra Pradesh, India

³ Department of Robotics Engineering, College of Mechanical and IT Engineering, Yeungnam University, Gyeongsan 38541, Republic of Korea

* Correspondence: thirumalaphy@gmail.com (T.R.G.); ravindra_physicist@ynu.ac.kr (R.K.)

Materials

Precursors included zinc acetate, NaOH, cadmium acetate, cobalt nitrate and Na₂S. All of the chemical reagents utilized were AR grade (Merck chemicals). All dilution and sample preparation are done with deionized water and ethanol.

Characterizations

Powder X-beam diffraction design making use of a PANalytical Xpert Pro-diffractometer and CuK α radiation (1.5406 Å). ZEISS EVO 18 was utilized to obtain morphology of the samples by SEM analysis. HITACHI-H-7600 instrument was utilized to get the TEM micrographs. Tecnai G2 F20 S-Twin electron microscope was used to obtain HRTEM images. A Thermo Scientific K α X-ray source was used for collect X-ray photoelectron spectroscopy. The UV-vis diffuse reflectance spectra were performed on a VARIAN, Cary 5000 spectrophotometer. Photoluminescence study was performed by Jobin Yvon Fluorimeter. The attractive hysteresis circle was made using a Lake Shore 7407 vibrating examination magnetometer (VSM).

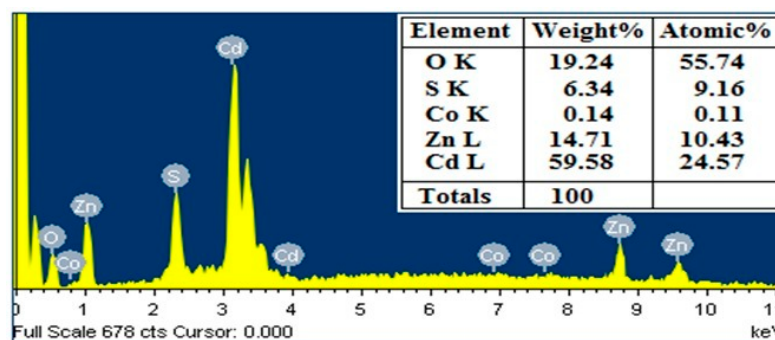


Figure S1. EDS spectrum of Co-doped ZnO/CdS nanosheets.