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**Synthesis and Characterization of Mg-doped ZnO Nanorods for Biomedical Applications** H. GEMAR, N.C. DAS, A. WANEKAYA, R. DELONG, K. GHOSH, Missouri State University — Nanomaterials research has become a major attraction in the field of advanced materials research in the area of Physics, Chemistry, and Materials Science. Bio-compatible and chemically stable metal nanoparticles have biomedical applications that includes drug delivery, cell and DNA separation, gene cloning, magnetic resonance imaging (MRI). This research is aimed at the fabrication and characterization of Mg-doped ZnO nanorods. Hydrothermal synthesis of undoped ZnO and Mg-doped ZnO nanorods is carried out using aqueous solutions of  $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ ,  $\text{MgSO}_4$ , and using  $\text{NH}_4\text{OH}$  as hydrolytic catalyst. Nanomaterials of different sizes and shapes were synthesized by varying the process parameters such as molarity (0.15M, 0.3M, 0.5M) and pH (8-11) of the precursors, growth temperature ( $130^\circ\text{C}$ ), and annealing time during the hydrothermal Process. Structural, morphological, and optical properties are studied using various techniques such as XRD, SEM, UV-vis and PL spectroscopy. Detailed structural, and optical properties will be discussed in this presentation. This work is partially supported by National Cancer Institute (1 R15 CA139390-01).

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