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Microstructural and Optical properties of transition metal (Cu) doped ZnO diluted magnetic semiconductor nano thin films fabricated by sol gel method.¹ OZGUR OZTURK, ELIF ASIKUZUN, A. TOLGA TASCI, Kastamonu University, LUTFI ARDA, Bahcesehir University, SEVIM DEMIROZU SENOL, Abant Izzet Baysal University, SUKRU CELIK, Sinop University, CABIR TERZIOGLU, Abant Izzet Baysal University — Undoped and Cu (Copper) doped ZnO ($Zn_{1-x}Cu_xO$) semiconductor thin films were produced by using sol-gel method. Cu was doped 1%, 2%, 3%, 4% and 5% ratio. Methanol and monoethanolamine (MEA) were used as solvent and stabilizer. In this study, the effect of Cu doping was investigated on microstructural and optical properties of ZnO DMS thin films. XRD, SEM, AFM and UV-VIS spectrometer measurements were performed for the microstructural and optical characterization. XRD, SEM and AFM results were showed that all of Cu doped ZnO based thin films have a hexagonal structure. The grain size of Cu doped ZnO thin films and morphology of surface were changed with increasing Cu doping. The optical transmittance of transition metal (Cu) doped ZnO thin films were decreased with doping. **Keywords:** Diluted Magnetic Semiconductor (DMS), Thin Film, Cu-doping, Bandgap Energy, ZnO.

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