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Magnetic and transport properties of cobalt doped ZnO Epitaxial thin films. HYO-JIN LEE, Department of Physics & Electron Spin Science Center, Pohang University of Science and Technology, Pohang 790-784, S. Korea, FIKRET YILDIZ, S.-H LEE, YOON-HEE JEONG, Department of Physics & Electron Spin Science Center, Pohang University of Science and Technology, Pohang 790-784, S. Korea — Transition metal doped ZnO has become an important topic of scientific interest in view of diluted magnetic semiconductor (DMS) at room temperature. A series of $Zn_{1-x}Co_xO$ ($0 \leq x \leq 0.2$) thin films on sapphire (0001) substrates were epitaxially grown by using Laser MBE deposition technique, controlling laser fluence, substrate temperatures and oxygen partial pressures. RHEED, X-ray diffraction (XRD), Atomic force microscope (AFM) scanning, magnetization and transport measurements were performed to investigate their structural, morphological, transport and magnetic properties. During the film growth, layer by layer growth mode were seen on RHEED pattern. XRD measurements showed that the films have the single phase of the pure ZnO wurtzite structure, there was not any secondary phase. The RMS values of roughness of the films were determined about $2\mathring{A}$ range from AFM images. The electric and magnetic properties will be presented.

Department of Physics & Electron Spin Science Center, Pohang University of Science and Technology, Pohang

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