

Abstract Submitted
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Electrodeposition of Co-doped Cu₂O layers with high Curie temperature¹ ANDRE A. PASA, IURI S. BRANDT, ALEXANDRE D.C. VIEGAS, MILTON A. TUMELERO, JOSE J. S. ACUNA, Departamento de Física, Universidade Federal de Santa Catarina, Florianópolis, Brazil, ENIO LIMA JR., ROBERTO D. ZYSLER, Centro Atómico Bariloche and Instituto Balseiro, Argentina — In this work, we have studied the magnetic properties of room temperature electrodeposited Cu₂O layers doped with Co. These layers were grown from electrolytes containing lactic acid and copper sulfate, with the addition of cobalt sulfate for the doping process. The layers are considered as a diluted magnetic semiconductor, showing ferromagnetic behavior above room temperature and saturation magnetization proportional to the concentration of cobalt sulfate. The decrease of lattice parameter and resistivity with the increase of the band gap for doped samples were results that pointed out to the Co incorporation to the growing layers as individual atoms. In addition, no evidences for the existence of superparamagnetic particles were observed from ZFC and FC curves, hysteresis loops and HRTEM images. The magnetic behavior is associated to Co atoms diluted in the Cu₂O lattice and a promising Curie temperature for spintronic application of 550 K was determined.

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