

Magnetic properties of sol-gel derived Ni-Zn ferrite thin films

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Abstract. The soft Ni-Zn ferrites thin films were fabricated by a new metal salts-routed sol-gel processing, and magnetic properties of the films were investigated. A film with an homogeneous spinel phase was obtained from stock solution spun on SiO₂/Si(100) substrate and a subsequent heat treatment ranging 500-800°C in air or O₂. The microstructure of the films consisted of spherical grains of 500-1000 Å in size and 50-100 Å in surface roughness (rms). Microstructure and magnetic properties of the films were functions of annealing temperature and atmosphere. The optimized film was attained by annealing at 600°C in O₂, which exhibited $M_s=300$ emu/cc and $H_c=170$ Oe.