J Material Sci Eng 2013, 2:4
http://dx.doi.org/10.4172/2169-0022.S1.012

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Materials Science & Engineering

October 07-09, 2013 Hampton Inn Tropicana, Las Vegas, NV, USA

A comparative study between bulk and r.f. sputtered thin films of boron doped NiMnGa

B. Rajini Kanth
T. K. R. College of Engineering and Technology, India

Study of ferromagnetic shape memory alloys is of interest, because of their smart behaviour and these can be good candidates for the sensors and actuators applications. NiMnGa is considered a prototype of these materials, but being brittle practically using it is difficult. We have doped boron because it stabilizes the martensite also to enhance its ductility and studied their magnetic and transport properties. The thin film samples were deposited at a constant r. f. power of 60 W for 60 min duration, on glass substrates kept at room temperature at different partial pressures 0.06, 0.01, 0.2 mb. The films were subsequently annealed at 773 K for 30 min and were characterized by using the X-ray diffraction (XRD), scanning electron microscopy (SEM) and energy dispersive X-ray analysis (EDAX) and magnetization measurements. From the room temperature, XRD and SEM, EDAX of the thin films, the structure and composition of these samples were found to be preparation conditions dependant. From the SEM photographs, the thin films were found to be possessing fine grained microstructure on the glass and, grains were large in size at 0.06 mb partial pressure. The structural and magnetic transformation temperatures were determined using the magnetic and transport measurements for both bulk and thin film samples and the properties were compared. The results on such studies were presented in this paper.

Biography

B. Rajini Kanth has completed his Ph.D. at the age of 30 years from Osmania University and post-doctoral studies from S. N. Bose National Center for Basic Sciences, Salt Lake, Kolkata, India from the Department of Condensed Matter Physics from 2007 to 2011. Presently, he is working as the Dean R&D, Department of Science and Humanites, T. K. R. College of Engineering and Technology, Hyderabad, India, a premier Engineering and Technological Institute. Recently, the Department of Science and Technology, New Delhi, India has sanctioned a research project under the Young Scientist Scheme. He has published more than 16 research papers in reputed journals and is a life member of Magnetics Society of India, Kanchan Bagh, Hyderabad.

rajani75@gmail.com

Size-controlled green synthesis of copper nanoparticles using rose buds extract

G. Bhikshamaiah[1], S. Annapurna[1], Y. Suresh[1] and A. K. Singh[2]
[1]Osmania University, India
[2]Defence metallurgical Research Laboratory, India

Synthesis of metal nanoparticles is an expanding research area due to the high potential applications for the development of novel technologies. The present work reports a fast, convenient and eco-friendly method for the synthesis of copper nanoparticles. In the present study, copper nanoparticles were synthesized by reducing Cu2+ ions present in the aqueous solution of copper sulphate using rosebud extract.

Green synthesized copper nanoparticles were characterized using X-ray diffraction (XRD), Fourier transform infrared (FTIR) spectroscopy, UV-visible absorption spectroscopy, scanning electron microscopy (SEM), energy-dispersive X-ray (EDX) and small angle X-ray scattering (SAXS) techniques. XRD analysis reveals that there are three main characteristic diffraction peaks present at around 2θ=43°, 50° and 74° which correspond to the (111), (200), (220) crystallographic planes of face-centered cubic crystals. The crystallite size is calculated using Scherer's formula and found to be around 30 nm. The FT-IR spectrum of copper nanoparticles exhibits the broad band observed at around 3480 cm-1 and 617 cm-1 that illustrates the stretching frequency of hydroxyl group (OH group) present in the surface of the copper nanoparticle. UV-Visble absorption spectrum of synthesized copper nanoparticles displayed an absorption peak at around 570 nm. SEM images of copper nanoparticles shows monodispersed distribution of particles with an average size of 30 nm. The particle size is calculated by using SAXS.

Biography

G. Bhikshamaiah is a Professor of Physics at the Department of Physics, Osmania University, Hyderabad. He did his M.Sc. Physics with solid state physics specialization in 1980 and has obtained Ph.D. in 1987 for his thesis entitled 'Debye temperatures and microstructural parameters of Ag-Cd-Zn and Cu-Al alloys' by Osmania University. His research interests include magnetic, transport and thermal properties of double pervoskites, optical properties of inorganic glasses, and characterization of nanomaterials. He has 31 research papers including review articles published in various international and national journals. He has 23 years of teaching and 30 years of research experience. He has authored 3 text books of Govt. of AP.

sap_bak@yahoo.com