FIRST CIRCULAR

IUMRS ICA 2013

Dec 16-20

Indian Institute of Science

Bangalore - 560012, India

This conference will be organized at Indian Institute of Science, Bangalore, India, under the aegis of MRSI. The conference will provide a platform for the Asian scientists to present and deliberate cutting edge research and development in the field of materials science and forge international collaboration. On behalf of the International Union of Materials Research Society, Materials Research Society of India cordially invites you to the International Conference in Asia - 2013 (IUMRS-ICA 2013).

IMPORTANT DATES

Preregistration opens	: 15 Feb 2013
Abstract Submission opens	: 01 May 2013
Abstract Submission closes	: 31 July 2013
Communication of acceptance of Abstracts	: 02 Sept 2013
Online registration with payment opens	: 01 Aug 2013
Online registration with payment closes	: 15 Nov 2013

TOPICS

Electronic and Photonic Materials

Functional Materials

Energy and Green materials

Advanced Structural Materials

Materials Modelling and Simulation

Materials Characterization

Materials for Bio/Medical Applications

VENUE

J N Tata Auditorium, Indian Institute of Science

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10 - Poster - 10	Mamatha D Daivajna Ashok Rao	Magnetic properties of bismuth doped $Pr_{0.6-x}$ $Bi_xSr_{0.4}MnO_3(0<x<0.15)$ manganites	**ABS - 283 - ICA**
10 - Poster - 11	S. Bhaumik A. K. Sinha S. K. Ray, A. K. Das	Optical and magnetic properties of Co doped ZnO-ZnS core-shell nanorods	**ABS - 307 - ICA**
10 - Poster - 12	Nilotpal Ghosh and H.L. Bhat	Critical Point Phenomena, Magnetocaloric effect and Scaling Anomalies in Ferromagnetic Insulating $Nd_{0.7}Pb_{0.3}MnO_3$	**ABS - 315 - ICA**
10 - Poster - 13	Sudakar Chandran	Tuning Functional Properties by Engineering Defects in Oxides	**ABS - 359 - ICA**
10 - Poster - 14	U. Manju I. Vobornik J. Fujii , F. Borgatti P. Torelli , D. Krizmancic Y. S. Hor, R. J. Cava and G. Panaccione	Magnetic Proximity Effect as a Pathway to Spintronic Applications of Topological Insulators	**ABS - 421 - ICA**
10 - Poster - 15	D. Topwal, U. Manju S. Gardonio J.-F. Jerratsch N. Nilius, G. Pacchioni H.-J Freund and C. Carbone	Trapping isolated magnetic atoms	**ABS - 427 - ICA**
10 - Poster - 16	B.V. Rao P.V.L.Narayana and A.D.P. Rao	Magnetic and Microstructural Studies of Mo^{6+} Substituted Copper Ferrite	**ABS - 471 - ICA**
10 - Poster - 17	Prashant Kumar Sitharaman Uma and Rajamani Nagarajan	Precursor driven one pot synthesis of Wurtzite and Chalcopyrite $CuFeS_2$	**ABS - 476 - ICA**
10 - Poster - 18	Sudipta Dutta Jayasimha Atulasimha M.S. Bobji and Arindam Ghosh	Magnetic Force Microscopy (MFM) – A Tool to study magnetic property of Ni nanowires	**ABS - 511 - ICA**
10 - Poster - 19	Elaine T. Dias K. R. Priolkar and A. K. Nigam	Tuning Magneto-structural transformation temperature in Antiperovskite Compounds	**ABS - 546 - ICA**
10 - Poster - 20	Nagaiah Kambhala and S. Angappane	Proper electroresistance of $La_{0.67}Ca_{0.33}MnO_3$ thin film	**ABS - 579 - ICA**
10 - Poster - 21	K.B.Korzhynbayeva S.M.Tazhibayeva K.B.Musabekov D.K.Bolatova O.Ye.Zhanadilov	Magnetic Nanocomposites of Diatomite/ Iron Oxide	**ABS - 590 - ICA**
10 - Poster - 22	B. K. Pandey A. K. Shahi and Ram Gopal	Optical and magnetic properties of Fe_2O_3 nanoparticles synthesized by laser ablation/ fragmentation technique in different liquid media	**ABS - 611 - ICA**

Magnetic Nanocomposites of Diatomite/Iron Oxide

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ABSTRACT

There is currently great interest in the use of magnetic composites due to their potential use in the targeted delivery of drugs, as well as their use as magnetic sorbents in different fields including biotechnology, medicine, and pharmacology. We therefore obtained magnetic composites as a natural sorbent (diatomaceous earth). In the future it would be useful to produce composite magnetite-diatomite-drug, which would allow for systemic transport inside the human body and minimize drug loss and enhance target delivery. Magnetic Composites obtained on the basis iron oxides are highly dispersed composite material consisting of particles of magnetic iron oxide phase deposited on the surface of the carrier phase (in this case, this function takes the natural mineral - diatomite) having certain biological and pharmaceutical properties, or is a substrate for applying such formulations. On the surfaces of the magnetic phase drug when administered to a human has to go into a fluid phase variable speed, which would deliver more of the drug to the necessary location. This will require to get a magnetic composite, which would have a function that the drug with magnetic composite entering the human body moving in a fluid phase with variable speed, which would deliver more of the drug to the necessary location.

In order to obtain magnetic composite, iron oxide was mixed with natural minerals containing 10%, 25%, and 50% magnetite; composite magnetic diatomite was obtained from superfine iron oxide in the presence of diatomaceous earth. Magnetic diatomite iron oxide was synthesized by a three step co-precipitation process: (1) co-precipitation of a mixture of two iron salts and ferric hydroxide, (2) sodium peptization using sulfuric acid, and (3) centrifuging the precipitate. The obtained magnetic composite was washed with water and filtered, followed by vacuum drying to form iron oxide diatomite. By using this method, composites containing the magnetic particle-phase were obtained.

Here we used diatomite deposits from the Mugojar Aktobe region. The phase composition of the composites was investigated using X-ray diffraction (XRD). XRD revealed that magnetic composite diatomite (10% and 25% magnetite) consisted of quartz and maghemite (Fe_2O_3-magnetite-2,51, SiO_2-quartz-3,39); only the composite composed of 50% magnetite had the composition Fe_2O_3-maghemite-2,51, SiO_2-quartz-3,39, and Fe_3O_4-magnetite-2,94. The presence of quartz in all the samples was explained by the fact that the mass fraction of quartz in the diatomite was 63%.

Therefore we establish that magnetite is the main component of all the samples, and are therefore likely to be useful as drug delivery composites.