

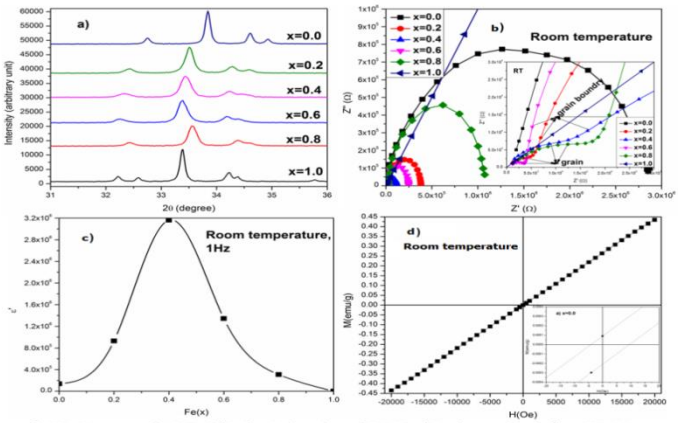
Effects of Fe Substitution On Structural, Electrical And Magnetical Properties of Erbium Ortho-Chromite Nano Polycrystalline Material

JADA SHANKER, DEPARTMENT OF PHYSICS, OSMANIA UNIVERSITY, HYDERABAD, INDIA.
M. BUCHI SURESH INTERNATIONAL ADVANCED RESEARCH CENTRE FOR POWDER METALLURGY AND NEW MATERIALS, HYDERABAD, INDIA.
P. SRAVANAN, DEFENCE METALLURGICAL RESEARCH LABORATORY, HYDERABAD, INDIA.
D. SURESH BABU, DEPARTMENT OF PHYSICS, OSMANIA UNIVERSITY, HYDERABAD, INDIA.

Abstract:

The perovskite nano polycrystalline samples of the $ErCr_{1-x}Fe_xO_3$ system have successfully synthesized using sol-gel auto-combustion process. The structural and morphological data were carried out at room temperature. The impedance data obtained in a wide frequency (1Hz-1MHz) and the temperature range (RT-600^{0}C). The room temperature magnetic measurements have performed in the applied field up to 20KOe. All the samples except x=1.0 exhibited giant dielectric behavior (>10^3) in low frequency region at room temperature due to the grain boundary effects. Impendence plots of all samples indicated the NTCR, non-Debye behavior. M-H hysteresis of all samples except x=1.0 suggesting the weak ferromagnetic in nature, and x=1.0 sample showed ferromagnetic behavior. The detailed investigations have discussed.

Key words: A Sol-gel auto-combustion process, Perovskite, giant dielectric, weak ferromagnetic



a) XRD Pattern of ECFO, b)Colle-Cole plot of ECFO, c)Fe dependent ε' at RT, 1Hz, d) M-H Hysteresis of $ErCrO_3$ at Room temperature

Recent Publications (minimum 5)

1. Jada Shanker, B. Vittal Prasad, M. Buchi Suresh, R. Vijaya Kumar, D. Suresh Babu, Electrical properties of NdCr1-xFexO3 perovskite ceramic nanoparticles—An impedance spectroscopy studies, Materials Research Bulletin 94 (2017) 385-398.
2. Jada Shanker, K. Venkataramana, B. Vittal Prasad, R. Vijaya Kumar, D. Suresh Babu, Influence of Fe substitution on structural and electrical properties of Gd orthochromite ceramics, Journal of Alloys and Compounds 732 (2018) 314-327.
3. Jada Shanker, M.Buchi Suresh, D. Suresh Babu, Synthesis, Characterization and Electrical Properties of $NdXO_3$ (X=Cr, Fe) Nanoparticle, Materials Today: Proceedings 3 (2016) 2091-2100.
4. Jada Shanker, M. Buchi Suresh, D. Suresh Babu, Synthesis, characterization and impedance spectroscopy studies of $NdFeO_3$ perovskite ceramics, International Journal of Scientific Engineering and Research, ISSN (Online): 2347-3878.
5. Bandi Vittal Prasad, G. Narsinga Rao, J. W. Chen, D. Suresh Babu, Relaxor ferroelectric like giant permittivity in PrCrO3 semiconductor ceramics, Materials Chemistry and Physics 126 (2011) 918–921.

Biography

Jada Shanker is doing Ph.D in Physics on the field of Multiferroic perovskite materials. He worked in UPE-Project for two years in the same university. He published six international papers, presented more than 20 papers in international conferences. Dr. D. Suresh Babu is a retired professor from Osmania University, Hyderabad. He was involved in preparing ceramics of High Tc Superconductors, Colossal dielectric constant materials and Multiferroics. Dr. M. Buchi suresh is a scientist in ARCI, Hyderabad. He has 15 years of experience in the field of polycrystalline oxide ceramics for various applications and published about 30 papers in international journals.

Presenting author details

Full name (As per the passport): Jada Shanker
University/Industry/Organization name: Osmania University
Designation: Research scholar
Country: India
Mobile number (*country code – number*)**: +917032339432**
Email:
Category (Oral presentation/ Poster presentation/Young researcher forum/E-poster):
Research interest: Magnetic and Electric properties studies of Prevoskite materials

Your profile page URL in your department: https://www.researchgate.net/profile/Shanker_Jada
Year of birth: 1988
Linked In/Facebook/twitter account: jadashanker.phdgmail.com; jadashanker@yahoo.com