Oct - Dec © 2017 Transactions; 4(16): 592-596

International Journal of Research and Applications

ISSN (online): 2349-0020 ISSN (print): 2394-4544 http://www.ijraonline.com/

Research Article

Characterization of dielectric and magnetic studies of Cr doped Tio_2 nanoparticles

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DOI:
http://dx.doi.org/
10.17812/IJRA.4.16(99)2017

Manuscript:
Received: 5th Oct, 2017
Accepted: 11th Nov, 2017
Published: 19th Dec, 2017

Publisher:
Global Science Publishing Group, USA
http://www.globalsciencepg.org/

ABSTRACT

This paper puts forward the contribution of Cr ions on the dielectric feature and magnetic properties of titania nanoparticles with stoichiometric formula Ti1-xCrxO_2 (x = 0.00, 0.03, 0.05 and 0.07). The frequency dependent dielectric properties at room temperature have been investigated using LCR meter. Field and temperature dependent magnetic measurements have been done using VSM and SQUID magnetometers. The presence of AFM coupling has also been analyzed quantitatively. Enhancement in the dielectric property in Cr doped TiO_2 NPs is an additional advantage for the viewpoint of device application in Nano-sized dielectric materials. This AFM coupling along with super exchange interaction reduce the magnetic moment of the Cr doped TiO_2 NPs and weak ferromagnetism is observed in the synthesized Cr doped TiO_2 samples.

Keywords: TiO2 nanoparticles, *LCR* meter, VSM, AFM & SQUID.

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IJRA - Year of 2017 Transactions:
Month: October - December
Volume – 4, Issue – 16, Page No's: 592-596
Subject Stream: Physics

Paper Communication: Author Direct

Paper Reference Id: IJRA-2017: 4(16)592-596