

Synthesis, characterization and applications of multifunctional DyCrO₃ nanoparticles prepared by low temperature reverse miceller route

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Abstract: Multiferroic nanoparticles, Dysprosium Chromate (DyCrO₃) of average particle size of 60±5 nm and narrower band gap have been synthesized through a low temperature reverse miceller method by using tergitol as surfactant at 700 °C. As synthesized material was characterized through powder X-ray diffraction, Transmission Electron Microscopy (TEM), UV-Visible, Brunauer Emmett and Teller (BET) Surface Area studies. Powder X-Ray Diffraction studies reveal the monophasic nature of pure orthorhombic DyCrO₃ nanoparticles with space group Pbnm (62). TEM studies associated to the uniform spherical particles, however BET studies give the high specific surface area of 329 m²/g which corroborated well to the TEM size studies. In this paper we have also reported variation in dielectric properties with respect to frequency and the temperature of DyCrO₃ nanoparticles.

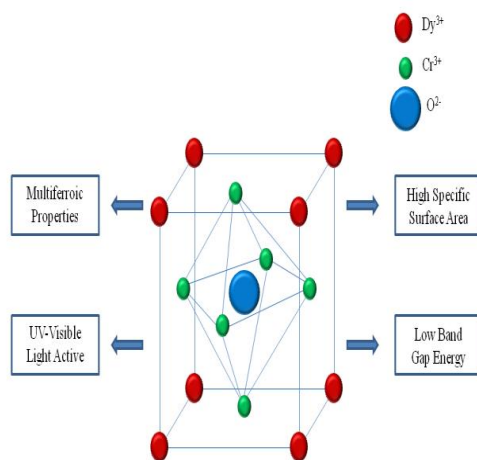


Fig 1 Perovskite Structure of Multifunctional DyCrO₃ Nanoparticles

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Biography: Amir Mehtab is presently pursuing his PhD under supervision of Dr. Tokeer Ahmad at Department of Chemistry Jamia Millia Islamia. Dr. Tokeer Ahmad has completed his PhD from IIT Delhi and presently working as associate professor at Department of Chemistry, Jamia Millia Islamia, New Delhi, India. He has supervised eight PhD's, 50 post graduate students and currently supervising eight PhD students. He has published more than 100 papers in reputed journal. He has been honored by Hon'ble President of India for being inspired Teacher's Fellow.

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