



Band Gap Energy Calculation of Cobalt Doped Bismuth Ferrite Nanoparticles

Atul Kumar Sinha

Physics Department, KIIT, Deemed to be University, Patia, Bhubaneswar-751024, India

Cobalt doped Bismuth Ferrite Nanoparticles $[BiFe_{1-x}Co_xO_3]$, where $x = 0.00, 0.01, 0.03, 0.05$ and 0.07 were synthesized by ethylene glycol-based sol-gel technique and annealed at relatively low temperature of $550^{\circ}C$. XRD confirmed the phase pure formation of pristine $BiFeO_3$, and cobalt doped $BiFeO_3$ samples. The crystallite sizes as determined by Scherrer equation were found to be 46 nm, 50 nm, 48 nm, 45 nm and 43 nm for 0%, 1%, 3%, 5% and 7% cobalt doped Bismuth ferrite nanoparticles respectively. The Absorption spectra was performed by Uv Visible Spectroscopy. Band gap energy was calculated by Tauc Equation. With the increase in doping level 0%, 1%, 3%, 5% and 7%, of Cobalt dopant, a gradual blue shift in the absorption peak has been observed in the manner, 592, 565, 555, 528 and 510 nm. Pristine Bismuth Ferrite exhibits the absorption peak at 592 nm and a maximum blue shift of 82 nm is observed for 7% Cobalt doped Bismuth Ferrite Nanoparticles.



Band Gap Energy Calculation of Cobalt Doped Bismuth Ferrite Nanoparticles

I have completed B.Tech in Electronics and Instrumentation Engineering from BITM Santiniketan, West Bengal, India in the year 2010, M.Tech in Nanoscience and Nanotechnology from BIT Mesra Main campus, Ranchi, India in the year 2014 and PhD in Experimental Condensed Matter Physics from Kalinga Institute of Industrial Technology Bhubaneswar, India will be awarded

[20th International Conference on Materials Science and Engineering, October 21-22, 2020](#)

8. Abstract Citation : [20th International Conference on Materials Science and Engineering, October 21-22, 2020](#) , [A low-voltage low-power positive feedback operational amplifier using Carbon Nanotube Field Effect Transistor.](#)



Band Gap Energy Calculation of Cobalt Doped Bismuth Ferrite Nanoparticles

Atul Kumar Sinha

Physics Department, KIIT, Deemed to be University, Patia, Bhubaneswar-751024, India