Cover Letter

To

The Editorial Office

Non-Metallic Material Science

Dear Sir/Madam,

I am enclosing one research article entitled “SYNTHESIS AND CHARACTERIZATION OF TRIVALENT AL SUBSTITUTED ZINC FERRITE USING ETHYLENE DIAMINE (EDA) AS LIGAND” for possible publication in your esteemed journal.

My Designation

Name: Soumya Mukherjee (Corresponding author)

Department of Metallurgical Engineering, Kazi Nazrul University, Asansol-713340, India

Email: [smmukherjee3@gmail.com](mailto:smmukherjee3@gmail.com),

The novelty of the present work lies in the synthesis of Al3+ substituted Zinc ferrite where Al occupies Fe site having x=0.5, 0.75 molar fraction. Thermal analyses is carried to determine the complexation reaction and hence the annealing temperature. Though 4 different temperatures are carried at 150°C, 350°C, 650°C and 950°C for 2 hours soaking period to synthesize the compound. Crystallite size is estimated to be about 5.45 to 16.69nm by scherrers formula while Williamson hall analysis yields crystallite size to be about 3.38nm to 66.67nm respectively with variation of Al substitution. Lattice strain variation is noted be close to be unity while with Al3+ substitution on Zinc ferrite lattice constant decreases. This decrease is due to difference radius of Al3+ (0.53Å) and Fe3+ (0.64Å). The exact values of lattice strain for ZnAl05Fe1.5O4 is about 0.076, 0.036, 0.011 and 0.02 respectively with increase in annealing temperatures 150°C, 350°C, 650°C and 950°C finally. Similarly for ZnAl075Fe1.25O4 using EDA as ligand, lattice strain is noted to be about 0.00815, 0.0465, 0.0388 and 0.0682 respectively with increase in annealing temperatures 150°C, 350°C, 650°C and 950°C.

Declaration: The research article is original and not being published elsewhere.

Conflict of interest: There is no conflict of interest.

Thanking you.

Best Regards

Dr. Soumya Mukherjee