

Curriculum Vitae

Dr. Lawrence Kumar

Assistant Professor

Centre for Nanotechnology

Central University of Jharkhand

Ranchi-835205, INDIA

Email: lawrence.kumar@cuja.ac.in

lawrencecuja@gmail.com

Mobile No: +91- 9771630347



Education:

- **PhD.** : Indian Institute of Technology Patna

IIT Patna (2009- 2013),

Course Work CGPA: 9.07/10

Thesis entitled: “*Crystal Structure and Magnetic Properties of Substituted Cobalt Ferrites*”.

- **M.Tech** : Materials Science and Technology

Indian Institute of Technology (Banaras Hindu University) Varanasi

IIT (BHU) Varanasi (2007-2009)

CGPA: 8.48/10

Dissertation entitled: “*Studies on Nanomaterials of Magnetic Ceramics*”.

- **M.Sc.:** Physics (Specialization: Solid State Physics)

Patna University (2003)

1st Class (70%)

Professional Experience:

- Assistant Professor, Centre for Nanotechnology, Central University of Jharkhand, Ranchi: 835205, India (since 1st August 2011).

Courses Taught:

- Quantum Mechanics and Quantum Structures
- Statistical Mechanics and Engineering Thermodynamics
- Physical Behaviour of Materials
- Crystallography and Crystal structure.
- Synthesis of Nanomaterials
- Nanomagnetism
- Ceramics Engineering
- Modern Microscopy Techniques
- Nanophotonics

Research Interest:

- Nanostructured Magnetic and Electronic Materials
- Multifunctional Nanocomposites
- Complex Oxide Nanomaterials
- Diluted Magnetic Semiconductors
- Nanomaterials Synthesis and Characterization
- Carbon Nanomaterials
- Nanomaterials for Energy Applications

Membership in Professional and Scientific Societies:

- Life member Magnetic Society of India.
- Life member Electron Microscope Society of India.

Awards/Recognitions:

- National Eligibility Test (CSIR-NET: Subject -Physical Science) for Lectureship eligibility conducted by Joint CSIR-UGC (December 2006).
- Graduate Aptitude Test in Engineering (GATE-Physics) 2006: All India Rank-593
- Graduate Aptitude Test in Engineering (GATE-Physics) 2007: All India Rank-128
- Joint Entrance Screening Test (JEST-Physics) 2007: All India Rank-295
- Received MHRD fellowship during M.Tech.
- Received Institute fellowship during Ph.D (IIT Patna)
- Received best poster award: Research Scholar day, IIT Patna 2011.

Research Experience Related to Supervision:

- **B.Tech Project Report (06 months duration): 03**

Project Title	Name of the Student	Year
Studies on nanomaterials of cobalt based spinel ferrites.	Swati Kumari	2014
Structural and optical properties of zinc oxide nanoparticles.	Vikash Kumar	2014
Structural analysis of some transition metal oxide nanomaterials using Rietveld method.	Vidhyadhar Mishra	2014

Workshops/Symposium Participation:

1. Participation in **Electron Microscopy Workshop**: University of Chicago's Center in Delhi, New Delhi, India, July 7, 2014.
2. Participation in **Workshop on Electron Microscopy in Material Science**: University of Delhi, New Delhi, India, July 8, 2014.

3. Participation in **Workshop on Application of Video Processing**: Department of Electrical Engineering, IIT Patna, India, December 24, 2010.
4. Participation in **National Symposium on Ethics in Science and Technology**: Patna Women's College, Patna University, Patna, India, August 22, 2009.

List of Publications:

Papers published in Refereed International Journals

1. **Lawrence Kumar**, P. Mohanty, T. Shripathi and Chandana Rath “*Appearance of superparamagnetic phase below curie temperature in cobalt chromite*” **Nanoscience and Nanotechnology Letters** 1 (2009) 199-203.
2. **Lawrence Kumar** and Manoranjan Kar “*Influence of Al^{3+} ion Concentration on the Crystal Structure and Magnetic Anisotropy of Nanocrystalline Spinel Cobalt Ferrite*” **J. Magn. Magn. Mater.** 323 (2011) 2042-2048.
3. **Lawrence Kumar** and Manoranjan Kar “*Effect of Annealing Temperature and Preparation Condition on Magnetic Anisotropy in Nanocrystalline cobalt Ferrite*” **IEEE Trans. Magn.** 47 (2011) 3645-3648.
4. **Lawrence Kumar** and Manoranjan Kar “*Effect of Ho^{3+} substitution on the cation distribution, crystal structure and magnetocrystalline anisotropy of nanocrystalline cobalt ferrite*” **Journal of Experimental Nanoscience**. Vol 9, Issue 4, 2014, Page 362-374. D.O.I: 10.1080/17458080.2012.661474.
5. **Lawrence Kumar** and Manoranjan Kar “*Effect of La^{3+} substitution on the structural and magnetocrystalline anisotropy of nanocrystalline cobalt ferrite ($CoFe_{2-x}La_xO_4$)*” **Ceramics International** 38 (2012) 4771-4782.
6. **Lawrence Kumar**, Pawan Kumar and Manoranjan Kar “*Influence of Mn substitution on crystal structure and magnetocrystalline anisotropy of nanocrystalline $Co_{1-x}Mn_xFe_{2-2x}Mn_{2x}O_4$* ” **Applied Nanoscience** 3(2013) 75-82.
7. **Lawrence Kumar**, Pawan Kumar and Manoranjan Kar “*Cation distribution by Rietveld technique and magnetocrystalline anisotropy of Zn substituted nanocrystalline cobalt ferrite*” **J. Alloys. Compd.** 551 (2013) 72-81.

8. **Lawrence Kumar**, Pawan Kumar, A. Narayan, Manoranjan Kar, “*Rietveld analysis of XRD patterns of different size of nanocrystalline cobalt ferrite*” **International Nanoletters** 3:8 (2013) 1-12.
9. **Lawrence Kumar**, Pawan Kumar and Manoranjan Kar “*Comparative studies on magnetocrystalline anisotropy constant of $CoFe_{1.5}M_{0.5}O_4$, $M=Al&Cr$* ” **Physics Express** 3:21 (2013) 1-6.
10. **Lawrence Kumar**, Pawan Kumar and Manoranjan Kar “*Effect of non- magnetic substitution on the structural and magnetic properties of spinel cobalt ferrite ceramics*” **J. Mat. Sci: Mater. Elec.** 24 (2013) 2706-2715.
11. **Lawrence Kumar**, Pawan Kumar, Sandeep Srivastava and Manoranjan Kar “*Low temperature and high magnetic field dependence magnetic properties of nanocrystalline cobalt ferrite*” **J. Supercond. Nov. Magn.** 27 (2014) 1677-1681.
12. **Lawrence Kumar**, Pawan Kumar and Manoranjan Kar “*Non-linear behavior of coercivity to the maximum applied field in La^{3+} substituted nanocrystalline cobalt ferrite*” **Physica B: Condensed Matter.** 448 (2014) 38-42.
13. Swati Kumari, Vikash Kumar, Pawan Kumar, Manoranjan Kar and **Lawrence Kumar** “*Structural and magnetic properties of nanocrystalline yttrium substituted cobalt ferrite synthesized by citrate precursor technique*” **Advance Powder Technology (Accepted-2014).**
14. Vikash Kumar, Swati Kumari, Pawan Kumar, Manoranjan Kar and **Lawrence Kumar** “*Structural analysis by Rietveld Method and its correlation with optical properties of nanocrystalline zinc oxide*” **(Under Review).**
15. **Lawrence Kumar**, Pawan Kumar, Victor Kuncser, Simona Greculeasa, Balaram Sahoo and Manoranjan Kar “*Interplay between cation distribution and magnetic properties of Cr substituted nanocrystalline cobalt ferrite*” **(Under Review).**
16. **Lawrence Kumar**, Pawan Kumar and Manoranjan Kar, “*High temperature magnetic properties of aluminum substituted cobalt ferrite nanoparticles*”. **(Communicated)**

Papers in Refereed Conference

1. Magnetic Anisotropy of Nanocrystalline Aluminium Substituted Cobalt Ferrite. Lawrence Kumar and Manoranjan Kar, *International Conference on Magnetic Materials, Saha Institute of Nuclear Physics Kolkata, India, October 25-29, 2010, Page No.306 (ICMM-2010)*.
2. Magnetic Anisotropy in Nanocrystalline Chromium Substituted Cobalt Ferrite. Lawrence Kumar and Manoranjan Kar, *Current Trends in Condensed Matter Physics, National Institute of Science Education and Research Bhubaneswar, India, December 15-19, 2010, Page No.74 (CTCMP-2010)*.
3. Influence of La³⁺ Ion Concentration on the Magnetic Anisotropy of Nanocrystalline Spinel Cobalt Ferrite. Lawrence Kumar and Manoranjan Kar, *National Seminar on Nanomaterials and Their Applications, Indian School of Mines Dhanbad, India, February 10-11, 2011, Page No.17 (NANOMAT-2011)*.
4. Effect of Annealing Temperature on Magnetic Anisotropy in Nanocrystalline Cobalt Ferrite. Lawrence Kumar and Manoranjan Kar, *International Magnetic Conference, Taipei, Taiwan, April 25-29, 2011 (INTERMAG-2011)*.
5. Structural and Magnetic Properties of Nanocrystalline La-substituted Cobalt Ferrite. Lawrence Kumar and Manoranjan Kar, *International Conference on Materials for Advanced Technologies, Suntec, Singapore, 26 June-1 July, 2011, Page No. 147 (ICMAT-2011)*.
6. Influence of Mn substitution on crystal structure and magnetocrystalline anisotropy of nanocrystalline cobalt ferrite. Lawrence Kumar, Pawan Kumar and Manoranjan Kar, *International Conference on Nanomaterials and Nanotechnology, University of Delhi, 18 December-21 December, 2011, (ICNANO-2011)*.
7. Influence of non-magnetic substitution on the structural and magnetic properties of nanocrystalline spinel cobalt ferrite. Lawrence Kumar, Pawan Kumar and Manoranjan Kar, *International Conference on Nanomaterials and Nanotechnology, University of Delhi, 18 December-21 December, 2011, (ICNANO-2011)*.

8. Cations Distribution studies in Spinel Ferrites from XRD pattern by Rietveld Method. Lawrence Kumar, Pawan Kumar and Manoranjan Kar. *ICWNCN-2012. Delhi University. March 13-16, 2012.*
9. Coercivity Response to the Maximum Applied Field in Nanocrystalline cobalt ferrite. Lawrence Kumar, Pawan Kumar and Manoranjan Kar, *International Conference on Structural and Physical properties of Solids (SPPS-2013), ISM-Dhanbad, November 18th -20th, 2013.*
10. Non-linear Behaviour of coercivity to the maximum Applied Field in La³⁺ substituted Nanocrystalline cobalt ferrite. Lawrence Kumar, Pawan Kumar and Manoranjan Kar, *International Conference on Magnetic Materials and Applications (MagMA-2013), IIT Guwahati, 05-07 December, 2013.*
11. Structural and Magnetic properties of rare earth substituted nanocrystalline cobalt ferrite. Lawrence Kumar, Swati Kumari, Vikash Kumar, Pawan Kumar and Manoranjan Kar, *International Conference on Electron Microscopy & XXXV Annual Meeting of Electron Microscope Society of India, University of Delhi, India, July 9-11, 2014, Page No: 434 (EMSI-2014).*