

Dr. Srikanti Kavita

Centre for Automotive Energy Materials,
International Advanced Research Centre for Powder Metallurgy and New Materials
(An autonomous R&D Centre of DST, Govt. Of India)
IIT-M Research Park, Phase-1, 7th Floor, Section B1
6, Kanagam Road, Taramani, Chennai-600113
E-mail: srikanti.kavita@gmail.com
Phone: +91-9962052712

Research Interest:

- Permanent Magnetic Materials
- Magnetocaloric Materials
- Magnetic nanostructures
- Magnetic thin films and multilayers /Bulk magnetic materials
- Perpendicular magnetic anisotropy
- Mössbauer spectroscopy
- Surface and interface study
- Effects of Ion beam irradiation in thin films

Qualifications:

Ph.D. (Physics) 2008, Devi Ahilya Vishwa Vidhyalaya, Indore, India

Title of Thesis: “Study of FePt and CoPt alloys exhibiting large perpendicular magnetic anisotropy”

Thesis Adviser: Prof. Ajay Gupta

Institute: UGC-DAE Consortium for Scientific Research, Indore, India

Master of Science (Physics) 2002, First class (80% marks), **Pondicherry Central University**
Pondicherry, India

Bachelor of Science (Electronics) 2000, First class (80% marks), **Andhra University**
Vishakhapatnam, India

Experience:

Positions held –

- **Scientist (Contract):** Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (An autonomous R&D Centre of DST, Govt. of India) from **2021- present**

- **Project Sr Scientist**, Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (An autonomous R&D Centre of DST, Govt. of India) from 2016-2020
- **Project Middle level Scientist**, Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (An autonomous R&D Centre of DST, Govt. of India) from 2012-2016
- **Research Associate**, National University of Singapore, Singapore from 2011-2012
- **Research Associate**, UGC-DAE Consortium for Scientific Research, Indore India from 2009 -2011
- **Ph.D. degree**, Devi Ahilya Vishwa Vidhyalaya, Indore, India from 2002 - 2008.
- **Senior Research Fellow (SRF)** at UGC-DAE Consortium for Scientific Research Indore, India from 2006 to 2008
- **Project Associate/Junior Research Fellow** at UGC-DAE Consortium for Scientific Research Indore, India from 2002 to 2006.

● **Projects :**

DST- BRICS project: Nanocrystalline hard magnetic Sm-Co-Fe-T alloys (T=Cu, Ti, Zn &Zr) with the normal and abnormal temperature dependence of coercivity (Co-PI)

Experience in experimental Techniques-

- **Thin film deposition techniques:** Ion-Beam sputtering, Electron Beam Evaporation.
- **Chemical route:** Solid state reaction, sol-gel method
- **Structural characterization:** X-ray reflectivity and Diffraction (XRR/XRD).
- **Magnetic methods:** Mössbauer spectroscopy, Magneto-optical Kerr Effect (MOKE), Physical Property Measurement System (PPMS), Vibrating sample magnetometer (VSM).
- **Powder Metallurgy routes:** Vacuum arc melting, Ball milling
- **Others:** Differential Scanning Calorimetry

Instrumentation Experience –

- Design and development of Magneto-Optical Kerr Effect set-up

Working Experience in Accelerator and Synchrotron:

- 15UD pelletron (Material Science beamline) in inter University Accelerator Center, **New Delhi, India**
- UGC-DAE CSR, photoelectron spectroscopy beamline RRCAT, **Indore, India.**
- ID 22N and ID32 beamlines at European Synchrotron Radiation Facility (ESRF), **Grenoble, France**
- MR-4A, Spallation Neutron Source, **Oak Ridge National Laboratory, USA**

Award/Scientific recognition:

- **Research Associateship (RA)** from University Grant Commission-Council for Scientific and Industrial Research (UGC-CSIR) India in year 2008.
- **Senior Research Fellowship (SRF)** in year 2005 from University Grant Commission-Council for Scientific and Industrial Research (UGC-CSIR).

Papers Presented in International/National conferences:

- **Oral presentation** in National Conference on Mossbauer Spectroscopy (NSAMS-2006) at Jodhpur, India.
- **Oral presentation** in 46th DAE Solid State Physics symposium, held in year 2003 at Jiwaji University Gwalior, India
- **Oral Presentation** in AVS 58th International Symposium and Exhibition, **Nashville** ,TN, USA from Oct 30th -Nov 4th 2011
- **Oral Presentation** in International Conference on Magnetic Materials and Applications (MagMa), held at IIT Guwahati from December 5th -7th , 2013
- **Poster presentation** “58th Annual Conference on MMM, Denver, Colorado, USA, 4th -8 th November 2013
- **Poster Presentation at** International Conference on Magnetic Materials and Applications (ICMagMa 2017) held at Hyderabad, 1st -3rd February 2017
- **Oral Presentation** in International Conference on Magnetic Materials and Applications (ICMagMa 2018) held at **NISER Bhubaneswar**, 9st -13th Decemeber 2018
- **Oral Presentation** in INTERMAG 2018 held at Singapore from 23rd- 27th April 2018

- **Oral Presentation** in TherMag 2018 held at Darmstadt, Germany 16-20th September 2018
- **Oral presentation** in EASTMAG 2019 held at Miheev Institue, Russia 8th- 13th September 2019.
- **Oral presentation** in STAR 2019, held in BARC, Mumbai, 5th- 7th December, 2019
- **Invited talk at** 1st International Workshop on Spintronics, (SpinWork 2020), held at MSEC, SIVAKASI, INDIA from 7th -11th Sept 2020.

International Conference attended:

- Attended “International Workshop on Nanomaterials Magnetic-Ions Spintronics (IWNMS-2004)” held at M S university **Baroda, India** during 10th –14th February, 2004.
- Attended “Material Science and Technology 2007 Conference and Exhibition” held at COBO centre, Detroit, **Michigan, USA** from 16th -20th September, 2007.
- Attended AVS 58th International Symposium and Exhibition, **Nashville ,TN, USA** from Oct 30th -Nov 4th 2011
- Attended International Conference on Magnetic Materials and Applications (MagMa), held at **IIT Guwahati** from December 5th -7th, 2013
- Attended International Conference on Magnetic Materials and Applications (ICMagMa 2017) held at **Hyderabad**, 1st -3rd February 2017
- Attended International Conference on Magnetic Materials and Applications (ICMagMa 2018) held at **NISER Bhubaneswar**, 9st -13th Decemeber 2018
- Attended INTERMAG 2018 held at Singapore from 23rd- 27th April 2018
- Attended TherMag 2018 held at Darmstadt, Germany 16-20th September 2018
- Attended Indo US symposium at IIT Mumbai 2018
- Attended ISMANAM at Chennai from 8th-12th July 2019
- Attended and given oral presentation at EASTMAG 2019 held at Ekaterinburg, Russia from 8th-13th September 2019
- Attended and gave oral presentation at STAR 2019, held at BARC, Mumbai from 5th-7th December 2019.

List of Publications: (h-index:4)

1. *Magnetic properties of $Sm_{2+a}Fe_{17}Ni_x$ powders prepared from bulk and strip-cast alloys*,
D.A. Kolodkin, A.G. Popov, A.V. Protasov, V.S. Gaviko, D.Yu. Vasilenko, S. Kavita, D. Prabhu, R. Gopalan, *J. Magn. and Magn. Mat* 518, 2021, 167416,
2. *On the Structural and Magnetic Properties of Mn-Bi Alloy Jet Milled at Different Feed Rates*
V.V. Ramakrishna, S. Kavita, T. Ramesh, R. Gautam, R. Gopalan,
Journal of Superconductivity and Novel Magnetism, 1-5, (2020)
3. *Investigation of magnetocaloric and mechanical properties of $Ni_{49-x}Mn_{39}Sb_{12}Co_x$ alloys*
S. Kavita, V.V. Ramakrishna, Shruti Behara, Debendranath Kar, Tiju Thomas, T. Ramesh,
K. Sethupathi and R. Gopalan.
Journal of Alloys and Compounds 847 (2020) 156558
4. *On the giant magnetocaloric and mechanical properties of Mn-Fe-P-Si-Ge alloy*
S. Kavita, G. Anusha, P. Bhatt, V. Suresh, R. Vijay, K. Sethupathi, R. Gopalan
Journal of Alloys and Compounds 817 (2020) 153232
5. *Effect of Copper Substitution on the Structural, Magnetic, and Dielectric Properties of M-Type Lead Hexaferrite*
Dipti D. Parmar, Preksha N. Dhruv, Sher Singh Meena, **S. Kavita**, Charanjeet Singh Sandhu, Mohamed Ellouze, Rajshree B. Jotania
Journal of Electronic Materials 49, 6024 (2020)
6. *Influence of Co^{4+} - Ca^{2+} substitution on structural, microstructure, magnetic, electrical and impedance characteristics of M-type barium-strontium hexagonal ferrites*
Charmi D. Patel, Preksha N. Dhruv, Sher Singh Meena, Charanjeet Singh, **Srikanti Kavita**, Mohamed Ellouze, Rajshree B. Jotania, *Ceramics International* (2020) (In Press)
7. *Effect of Vd-doping on dielectric, magnetic and gas sensing properties of nickel ferrite nanoparticles*
V. Manikandan, Iulian Petrila, **S. Kavita**, R. S. Mane, Juliano C. Denardin, Stefan Lundgaard, Saulius Juodkazis, S. Vigneselvan, J. Chandrasekaran,
Journal of Materials Science: Materials in Electronics accepted (2020)
8. *Effect of Copper Substitution on the Structural, Magnetic, and Dielectric Properties of M-Type Lead Hexaferrite*

- Dipti D Parmar, Preksha N Dhruv, Sher Singh Meena, **S.Kavita**, Charanjeet Singh Sandhu, Mohamed Ellouze, Rajshree B Jotania
Journal of Electronic Materials **49**, 6024 (2020)
9. *Effect of neodymium stimulation on the dielectric, magnetic and humidity sensing properties of iron oxide nanoparticles*
V Manikandan, Ali Mirzaei, Iulian Petrila, **S.Kavita**, RS Mane, Juliano C Denardin, Stefan Lundgaard, Saulius Juodkazis, J Chandrasekaran, S Vigneselman
Materials Chemistry and Physics 254, 123572 (2020)
10. *Effect of solid solution treatment and nitrogenation on magnetic properties of $Sm_{2+a}Fe_{17}N_x$ powders*
D Kolodkin , A Popov, A Protasov, V Gaviko, **S Kavita** , D B Prabhu , R Gopalan
Journal of Physics: Conference Series 1389 (2019) 012125
11. *Role of Ruthenium in the Dielectric, Magnetic Properties of Nickel Ferrite ($Ru-NiFe_2O_4$) Nanoparticles and Their Application in Hydrogen Sensors*
Venkatraman Manikandan, Ali Mirzaei, Sivasubramaniam Vigneselman, **Srikanti Kavita**, Rajaram Saktharam Mane, Sang Sub Kim, and Joseph Chandrasekaran
ACS Omega, 4 (2019) 12919
12. *Enhancement of martensite transition temperature and inverse magnetocaloric effect in $Ni_{43}Mn_{47}Sn_{11}$ alloy with B doping*
S Kavita, VV Ramakrishna, P Yadav, S Kethavath, NP Lalla, T Thomas, P.Bhatt and R.Gopalan
Journal of Alloys and Compounds 795 (2019) 519
13. *Enhancement in magnetic and dielectric properties of the ruthenium-doped copper ferrite ($Ru - CuFe_2O_4$) nanoparticles*
V. Manikandan, V. Kuncser, Bogdan Vasile, **S. Kavita**, S. Vigneselman, R.S.Mane
J.Magn. and Magn.Mat **476** (2019), 18
14. *Role of Ruthenium in the Dielectric, Magnetic Properties of Nickel Ferrite ($Ru-NiFe_2O_4$) Nanoparticles and Their Application in Hydrogen Sensors*
V Manikandan, A Mirzaei, S Vigneselman, S Kavita, RS Mane, SS Kim, ...
ACS omega 4 (7), 12919-12926
15. *Photoactive Brownmillerite Multiferroic $KBiFe_2O_5$ and its potential application in Sunlight Driven Photocatalysis*

Durga Sankar Vavilapalli, **Kavita Srikanti**, Ramanjaneyulu Mannam, Brajesh Tiwari,
Mohan Kant K , M.S Ramachandra Rao , Shubra Singh

ACS Omega 3 (12) (2018), 16643

16. *Investigation of structural and magnetic properties of Al and Cu doped MnBi alloy*

V.V. Ramakrishna, **S. Kavita**, Ravi Gautam, T. Ramesh and R. Gopalan
*J.Magn. Mater.*458 (2018) 23

17. *Efficient humidity-sensitive electrical response of annealed lithium substituted nickel ferrite (Li-NiFe₂O₄) nanoparticles under ideal, real and corrosive environments*

V Manikandan, I Petrila, S Vigneselvan, R Dharmavarapu, Saulius Juodkazis S. Kavita
J. Chandrasekaran

Journal of Materials Science: Materials in Electronics 29 (21), 18660 (2018)

18. *Influence of sintering temperature on structural, dielectric and magnetic properties of Li substituted CuFe₂O₄ nanoparticles*

V. Manikandan, A. Vanitha , E. Ranjith Kumar , **S. Kavita**
J.Magn. and Magn.Mat ,426 11 (2017)

19. *Sintering treatment effects on structural, dielectric and magnetic properties of Sn substituted NiFe₂O₄ nanoparticles*

V. Manikandan , N. Priyadharsini , **S. Kavita** , J. Chandrasekaran
Superlattices and Microstructures 1 1-7(2017)

20. *Structural and magnetic properties of the low temperature phase MnBi with ball milling*

S.Kavita, V.V.Ramakrishna, A.Srinivasan and R.Gopalan

Mater. Res.Exp 3, 056102 (2016)

21. *On the temperature dependent properties of Mn-Bi ribbons*

S.Kavita, U.M.R.Seelam, D.Prabhu and R. Gopalan

J.Magn. and Magn.Mat. 377, 485 (2015)

22. *On the question of thermal stability and magnetic properties of Mn_{0.6}Zn_{0.4}Fe₂O₄ nanoparticles prepared by sol-gel method*

Shanigraham Mallesh, **S.Kavita**, R.Gopalan and V.Srinivas

IEEE Trans. On Magn. 50, 2008204 (2014)

23. *Jahn-Teller assisted polaron hopping and associated dielectric response of PrFe_{0.5}Mn_{0.5}O_{2.95}*

- C. Ganeshraj, **S. Kavita**, R. Mahendiran, N. Sharma, A. Das and P. N. Santhosh
Appl. Phys. Lett. 103, 112909 (2013)
24. *Evolution of structural and magnetic properties of FePt/C granular films with isothermal annealing*
S. Kavita, V. Raghavendra Reddy and Ajay Gupta
Solid State Communications 151, 794 (2011)
25. *On the Si⁺ ion irradiation in CoPt multilayer system*
S. Kavita, V. Raghavendra Reddy, S. Amirthapandian, Ajay Gupta and B. K. Panigrahi
Journal of Physics Condensed Matter 21, 096003 (2009)
26. *⁵⁷Fe Mossbauer study of L1₀ Ordering in ⁵⁷Fe/Pt multilayers*
V. Raghavendra Reddy, **S. Kavita**, and Ajay Gupta
Journal of Applied Physics 99, 113906 (2006)
27. *Study of low energy Ar⁺ ion irradiated ⁵⁷Fe/Pt multilayers*
V. Raghavendra Reddy, **S. Kavita**, S. Amrithapandian, Ajay Gupta and B. K. Panigrahi
Journal of Physics Condensed Matter 18, 6401 (2006)
28. *Effect of swift heavy ion irradiation in FePt system*
S. Kavita, V. Raghavendra Reddy, Ajay Gupta and D. K. Awasthi
Nucl. Inst. and Methods in Phy. Res. B 244, 19 (2006)
29. *Study of Face centered tetragonal FePt phase formation in as-deposited and heavy ion irradiated Fe/Pt multilayers*
S. Kavita, V. Raghavendra Reddy, Ajay Gupta and A. Pandian
Nucl. Inst. and Methods in Phy. Res. B 244, 206 (2006)
30. *Preparation of Fe/Pt films with Perpendicular Magnetic Anisotropy*
S. Kavita, V. Raghavendra Reddy, Ajay Gupta and Mukul Gupta
Hyperfine Interactions 160, 157 (2005)

Conference Series

1. *Effect of thickness on the $L10$ ordering in Fe/Pt multilayer films*

S. Kavita, V.Raghavendra Reddy and Ajay Gupta

Proc. 50thDAE Solid State symposium (2005) 46, 459-460, BARC, Mumbai

2. *^{57}Fe Mossbauer study of $L1_0$ ordering in $^{57}\text{Fe}/\text{Pt}$ multilayers.*

S. Kavita, V.Raghavendra Reddy, and Ajay Gupta

Proc. 47thDAE Solid State symposium (2004) 49, 456-457, Amritsar

3. *Formation of ordered $L1_0$ FePt phase in Fe/Pt multilayers.*

S. Kavita, V.Raghavendra Reddy and Ajay Gupta

Proc. 46th DAE Solid State symposium (2003) 46, 415-416, Gwalior

4. *X-ray Photoelectron spectroscopy study of Pt/TiN Interface.*

S. Kavita, Satish Potdar and D.M.Phase.

Proc. 46thDAE Solid State symposium (2003) 46, 375-376, Gwalior

5. *Study of Co/Pt multilayer system with thermal annealing*

S. Kavita and Ajay Gupta

AIP proceedings **DAE Solid State symposium (2010)**, Manipal University

Other professional activities:

- Reviewer of reputed journals: Journal of Alloys and Compounds, Applied Physics Letters, Journal of Applied Physics, Applied Physics A, Arabic Journal of Chemistry, Vacuum
- Involved in setting up of the lab at CAEM, ARCI
- Guiding students for under graduate, master projects and PhD
- Won many prizes in interschool and intercollege Debate and elocution competitions
- Actively hosted various college functions.