Name of Faculty

Nature of Job/Appointment

Education Qualifications

Post-Doctoral Fellow

Ph. D

M. Phil

PG

UG

Designation

Date of Joining

E-mail

Dr. S. SHANMUKHARAO SAMATHAM

Assistant Professor

Regular

11-10-2021

shanmukharao_physics@cbit.ac.in

Name of the Degree

IIT Bombay

Physics (UGC-DAE CSR, INDORE)

Physics (UGC-DAE CSR, INDORE)

M. Sc. (Physics)

03 Years 07 Months

09 Years 11 Months

B. Sc. (MPC)

Class

Completed Awarded

First Class

First Class

First Class

Work Experience

Teaching Research

Industry

Others

Area of Specialization

Professional Memberships

Responsibilities held at Institution Level

Responsibilities held at Department Level

Research Guidance

Materials Physics, Magnetic Materials, Magnetic refrigeration materials, strongly correlated electron systems, quantum materials with quantum phase transition and critical point, unusual and novel magnetic ground states, topological materials.

1. American Physical Society (APS) Regular No: 62147468

2. International Association of Engineers (IAENG) No. 323136

3. Associate Member of IAOP No. IAOP-98840

Criterion In-charge: NAAC 3.6.3 & 3.6.4, SSR Report 2023
 Convener for Research Day 2022

1. Coordinator-NIRF 2022 to till date.

2. Coordinator-NAAC-Research Related Information

 SERB-Core Research Grant (CRG/2022/007993) of about 48 Lakh "Exploring spincaloritronic materials for waste heat management, magnetic refrigeration and EMI shielding applications" Role: PI

Status: ONGOING (Approved)

 UGC-DAE CSR-Collaborative Research Scheme (CRS/2022-23/1061) "Tailoring magneto-transport phenomena in magnetic skyrmion materials Mn1-xCrxSi and MnSi1-xSnx" Role: Principal Investigator Status: ONGOING (Approved)

 UGC-DAE CSR-Collaborative Research Scheme (CRS/2022-23/1206) "Exploring doped-MnNiGe ribbons for magnetocaloric, magnetoresistance and EMI shielding applicationsailoring" Role: Co-Investigator Status: ONGOING (Approved)

 DST-RSF_International Indo-Russia Bilateral Research Grant (DST/INT/RUS/RSF/P-47/2021(G)) of about 84 Lakh "Search for novel topological materials- A joint theoretical and experimental investigation Role: Co-Investigator Status: ONGOING

- SERB-TARE Research Grant (TAR/2018/000454) of 18.30 Lakh "Exploring magnetic, magnetocaloric and magnetoresistive properties of Ti(Fe1–xCox)2 (0 ≤x ≤ 1) Role: Principal Investigator Status: COMPLETED
- UGC-DAE CSR-Collaborative Research Scheme (CRS/IC-256/2017-18/1337) of about 45,000 "Designing Heusler compounds for magnetic refrigeration and spintronics application Role: Principal Investigator

Status: COMPLETED

National Journals - 00

National Conference – 06

- 1. Korea Research Fellowship-2019, (KRF. 2019H1D3A1A01102979)
- 2. Global Excellence Stature Fellowship at University of Johannesburg (UJ), South Africa, 2017.
- 3. Institute Postdoctoral Fellowship (IPDF) of IIT Bombay in 2015.
- 4. Best Oral Presentation Award in Research Scholar's Workshop on Physics of Materials at UGC-DAE CSR, Indore in 2013.
- 5. Qualifier to participate in Technical University Munich's Research

International Journals - 51

International Conference - 21

- 6. Opportunity Week (TUM-ROW) during November 11-15, 2013
- 7. CSIR-Senior Research Fellow (CSIR-SRF) in 2013.
- 8. GATE (Graduate Aptitude Test in Engineering) 2009.
- 9. JEST (Joint Entrance Screening Test JEST) 2009.

Optics and Semiconductor Physics, Mechanics and Materials Science, Engineering Physics, Applied Physics.

Courses Handled at Under Graduate / Post Graduate Level.

No. of Papers Published

Projects Carried out

Awards Received

Patents

Technology Transfer

Invited Speaker

No. of Books/Chapter Published with details

Details of Short-Term Training Programs / Faculty Development

- 1. Delivered an expert talk 'Non-centrosymmetric cubic chiral magnets' at International Conference on Emergent Techniques and Functional Materials during 12-14 July 2022 at Medicaps University, Indore
- 1. Large adiabatic temperature change in magnetoelastic transition in nanocrystalline of heusler Ni50Mn32Sn18 alloys
 - Prasanna, S. Ram, V. Ganesan and S. S. Rao
 - Functional Materials McMillan Publishers Ltd. New Delhi ISBN 978-935-059046-1, p. 195 (2011)
- 1. 9th Annual Symposium of the Department of Physics, IIT Bombay on 11-12th December 2021.
- Online SPICE-SPIN+X Seminar "Iron garnet thin films for spintronic and photonic devices" by Prof. Dr. Caroline A. Ross (MIT) on Jan. 26, 2022.
- 3. National Level Faculty Development Program on "Radiation Effects on Polymers and Advances in Organic Optoelectronic Devices" from Feb. 02-03, 2022 by Vaagdevi Engineering College, Warangal, India
- 4. Online SPICE-SPIN+X Seminar on "Spins, Bits, and Flips: Essentials for High-Density Magnetic Random-Access Memory" by Tiffany Santos on Feb. 23, 2022 by JGU, Germany.
- 5. Faculty Development Program on "Recent Trends on Smart Materials and their Applications" from February 07-11, 2022 by Vardhaman College of Engineering, Hyderabad, India.
- 6. Participated in "Short Term Training Programming on Latex", from February 21-25, 2022 by Amity School of Engineering and Technology, Amity University Mumbai, India.

- 7. Online SPICE-SPIN+X Seminar on "Three dimensional spintronics: 'Faster, higher, stronger'" on February 02, 2022 by JGU, Germany
- 8. Virtual Workshop on February 04, 2022 by PETASPIN, IEEE Magnetics Society Italy Chapter.
- 9. Virtual Workshop on February 18, 2022 by PETASPIN, IEEE Magnetics Society Italy Chapter.
- Two Day International Conference on "Advances in Smart Nano Materials organized by the Department of Physics, Govt. City College (Autonomous), Hyderabad from March 24-25, 2022.
- 11. Virtual workshop on "Topology in Magnetism and Ferroelectrics" on March 4, 2022 organized by PetaSpin Group, Germany.
- 12. Virtual workshop on "Scanning NV Magnetometry" on March 11, 2022 organized by PetaSpin Group, Germany.
- One Week online Faculty Development Programme on "e-Teaching Learning and Ethical Values in Education" held from March 12-17, 2022 organized by Faculty of Science, Shri Rajiv Gandhi Government College, Banda, (Sagar), Madhya Pradesh.
- 14. Online SPICE-SPIN+X Seminar on "Ferrimagnetic Spintronics" by Kyung-Jin Lee (KAIST) on Mar. 16, 2022 by JGU, Germany.
- 15. One Week Short Term Training Programme through ICT Mode on "Fundamental and Applications of Nanomaterials" organized by NITTTR, Kolkata from March 21-25 2022.
- 16. Online SPICE-SPIN+X Seminar on "Ultrafast magnetization reversal driven by optical phonons" by Andrei Kirilyuk (Radboud University) on March 23, 2022, organized by JGU, Mainz, Germany.
- 17. One day workshop on Essential Education for Accelerating Creative Careers on 21.04.2022, organized by Elets Technomedia sponsored by Adobe Technologies.
- 18. Two day Faculty In-house Training Program on 23rd & 30th of April, 2022 by Internal Quality Assurance Cell (IQAC), CBIT, Hyderabad.
- 19. Online SPICE-SPIN+X Seminar on "Modeling of magnetothermodynamics phenomena" by Oksana Chubykalo-Fesenko (CSIC) on May 4th, 2022
- 20. Online SPICE-SPIN+X Seminar on "Magnetic Chirality" by Sang-Wook Cheong (Rutgers University) on May 11, 2022
- 21. Online SPICE-SPIN+X Seminar on "Ferrimagnetic spintronics and self-torque" by Juan Carlos Rojas Sanchez (Institut Jean Lamour UL-CNRS) on May 18th, 2022

Details of Journal Publications/ Conferences (National and

International)

International /National Conferences from the year 2017

- Unveiling the correlation between structural and magnetic ordering in nano Co1-xNixTeO4 Akhilesh Kumar Patel, S. Shanmukharao Samatham, Ekta Rani, K. G. Suresh, Harishchandra Singh Phys. Chem. Chem. Phys. (2022) Accepted IF: 3.945
- 2. Nearly compensated ferrimagnetic behaviour and giant exchange bias of hexagonal Mn2PtAl: Experimental and theoretical study Akhilesh Kumar Patel, S. Shanmukharao Samatham, Alexey V. Lukoyanov, P. D. Babu, and K. G. Suresh
- Phys. Chem. Chem. Phys. 24, 29539 (2022) IF: 3.945
 Magnetic behavior of Ru substituted skyrmion metal MnSi
 S. Shanmukharao Samatham, Saurabh Singh, Akhilesh Kumar Patel, S. Shravan Kumar Reddy, Tsunehiro Takeuchi, and K. G. Suresh
 J. Phys.: Condens. Matter 34, 345801 (2022) IF: 2.333
- Experimental and theoretical investigations of Fe-Doped hexagonal MnNiGe
 S. Shanmukharao Samatham, Akhilesh Kumar Patel, Ashish Kumar Mishra, Alexey V. Lukoyanov, Lyubov
 N. Gramateeva, Archana Lakhani, Ganesan V., and Suresh K. G.
 ACS Omega 7, 18110 (2022) IF: 3.512
- 5. Electronic states structure of Gd5Sb3 and Gd5Ge2Sb compounds according to band calculations and optical spectroscopy

Yu. V. Knyazev, A. V. Lukoyanov, Yu. I., Kuzmin, S. Shanmukharao Samatham, Akhilesh Kumar Patel, and K. G. Suresh

Physics of the Solid State 64, 305 (2022) IF: 0.99

6. Magnetism and transport behaviour of Ni42Co8Mn38Sb12: Magnetization, electrical resistivity and Hall effect measurements

Akhilesh Kumar Patel, S. Shanmukharao Samatham and K. G. Suresh

Materials Research Bulletin, 146, 111577, (2022) IF: 4.641

- High-TC ferromagnetic inverse Heusler alloys: A comparative study of Fe2RhSi and Fe2RhGe Y. Venkateswara, S. Shanmukharao Samatham, Akhilesh Kumar Patel, P. D. Babu, Manoj Raama Varma, K. G. Suresh, and Aftab Alam Phys. Rev. B 104, 094402 (2021) IF: 3.836
- Non-collinear antiferromagnetism to compensated ferrimagnetism in Ti(Fe1–xCox)2 (x = 0, 0.5 and 1) alloys: Experiment and Theory
 S. Shanmukharao Samatham, Akhilesh Kumar Patel, A. V. Lukoyanov, K. G. Suresh and R. Nirmala
- Physical Chemistry Chemical Physics 23, 5607 (2021) IF: 3.430
 9. Unique structure induced magnetic and electrochemical activity in nanostructured transition metal tellurates Co1–xNxTeO4 (x = 0, 0.5 and 1.0)
 - Akhilesh Kumar Patel, Manas Ranjan Panda, Ekta Rani, Harishchandra Singh, S. Shanmukharao Samatham, Abharana Nagendra, Sambhu Nath Jha, Dibyendu Bhattacharyya, Krishnawarrier G. Suresh, and Sagar Mitra

ACS Applied Energy Materials 3, 9436, (2020) IF: 4.473

- Critical behavior, universality class and magneto-transport properties of Ni2MnIn Akhilesh Kumar Patel, S. Shanmukharao Samatham and K. G. Suresh Mater. Res. Bull. 128, 110900 (2020) IF: 4.019
- 11. Disorder-induced critical exponents near a ferromagnetic quantum critical point in Mn1–xCrxSi Ashish Kumar Mishra, S. Shanmukharao Samatham, Martin R. Lees, and V. Ganesan Phys. Rev. B 101, 144436 (2020) IF: 3.836
- 12. Coexistence of spin semimetal and Weyl semimetal behavior in FeRhCrGe Y. Venkateswara, S. Shanmukharao Samatham, P. D. Babu, K. G. Suresh and Aftab Alam Phys. Rev. B 100, 180404(R) (2019) IF: 3.836
- Magnetism of 3d and 4d metal doped Mn0:7T0:3NiGe (T = Fe, Co, Ru and Rh): magnetization and abinitio calculations S. Shanmukharao Samatham, Akhilesh Kumar Patel, A. V. Lukoyanov, E. D. Baglasov and K. G. Suresh J. Phys.: Condens. Matter 31, 495804 (2019) IF: 2.711
- 14. Magnetism and electronic structure of Gd5Ge2Sb: Experiment and Theory S. Shanmukharao Samatham, Akhilesh Kumar Patel, Alexey V. Lukoyanov and K. G. Suresh J. Alloys Comp. 806, 575 (2019) IF: 4.175
- Revelation of spin glass behaviour of Ru doped MnNiGe: Experiment and Theory S. Shanmukharao Samatham, Akhilesh Kumar Patel, A. V. Lukoyanov and K. G. Suresh J. Phys: Condens. Matter 31, 125803 (2019) IF: 2.711
- Effect of Ru substitution on structural, magnetic and transport behaviour of Ni50Mn38Sb12 Akhilesh Kumar Patel, S. Shanmukharao Samatham, A. K. Yadav, S. N. Jha, D. Bhattacharyya and K. G. Suresh J. Alloys Comp. 783, 977 (2019) IF: 4.175
- 17. Magnetization, resistivity, specific heat and ab initio calculations of Gd5Sb3 S. Shanmukharao Samatham, Akhilesh Kumar Patel, A. V. Lukoyanov and K. G. Suresh J. Phys.: Condens. Matter 30, 295802 (2018) IF: 2.711
- 18. Critical exponents and universal magnetic behavior of noncentrosymmetric Fe0:6Co0:4Si S. Shanmukharao Samatham and K. G. Suresh J. Phys.: Condens. Matter 30, 215802 (2018) IF: 2.711
- 19. Quantum phase transition and non-Fermi liquid behaviour in Fe1–xCoxSi (x ≥ 0.7) S. Shanmukharao Samatham, K. G. Suresh and V. Ganesan J. Phys.: Condens. Matter 30, 145602 (2018) IF: 2.711
- Competing magnetic and spin gap-less semiconducting behaviour in fully compensated ferrimagnet CrVTiAI: Theory and Experiment Y. Venkateswara, Sachin Gupta, S. Shanmukharao Samatham, Manoj Raama Varma, K. G. Suresh, Aftab Alam Phys. Rev. B 97, 054407 (2018) IF: 3.836
- 21. Spin fluctuations in Cr doped MnSi Ashish Mishra, Krishnan M, Durgesh Singh, S. Shanmukharao Samatham, M Gangrade, R Venkatesh and V Ganesan J. Magn. Magn. Mater. 448, 130 (2018) IF: 3.046
- 22. Critical behavior, universal magnetocaloric and magnetoresistance scaling of MnSi S. Shanmukharao Samatham and V. Ganesan Phys. Rev. B 95, 115118 (2017) IF: 3.836
- Quantum size effect on the heat capacity of nickel nanolattice J. Singh, Tarachand, S. S. Samatham, D. Venkateshwarlu, Netram Kaurav, V. Ganesan, and G. S. Okram Appl. Phys. Lett. 111, 201904 (2017) IF: 3.521
- 24. Spin-flop quasi-first order phase transition and putative tricritical point in Gd3Co S. Shanmukharao Samatham, Soumendu Barua and K. G. Suresh J. Magn. Magn. Mater. 444, 439 (2017) IF: 3.046
- Anomalous magneto-transport properties of Bi doped La0:67Sr0:33MnO3 S. Angappane, Nagaiah Kambhala, S. Shanmukharao Samatham, R. Venkatesh, V. Ganesan Phys. Status Solidi B 255, 1700194 (2017) IF: 1.674
- Weak arrest-like and field-driven first order magnetic phase transitions of itinerant Fe3Ga4 revealed by magnetization and magnetoresistance isotherms S. Shanmukharao Samatham and K. G. Suresh J. Magn. Magn. Mater 422, 174 (2017) IF: 3.046
- 27. Low temperature transport anomaly in Cr substituted (La0:67Sr0:33)MnO3 manganites Tejas M. Tank, Vilas Shelke, Sarmistha Das, D. S. Rana, C. M. Thaker, S. S. Samatham, V. Ganesan and S.P. Sanyal J. Magn. Magn. Mater. 432, 581 (2017) IF: 3.046.