



Angshuman Sarkar

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Profile Summary

- A **nanotechnologist with 6+ years** of scientific research experience using high end analytical instruments.
- An energetic, adaptable, and quick-learner with a keen interest in material research and development.
- Enjoy learning various new advanced research instruments and analytical tools to develop new skills and sort out new challenges in material research.
- I recently completed my **PhD** work at **IEST Shibpur** on the development of high energy density rare-earth-free permanent magnets and **submitted my PhD thesis**.

Core Competencies

- Experience in operation and handling advanced research analytical instruments like, AFM, MFM, Nanoindentation, XRD, TG/DSC.
- Experience in different type of sample preparation (Solid, Powder, Polymers) and their characterization specifically for AFM and MFM study.
- 4+ years of experience in organizing materials characterization laboratory (Scanning probe microscope, X-ray diffraction and TG-DSC) for undergraduate students.
- Extensive experience in writing research articles in national and international journals and patent.
- Good knowledge in the preparation of scientific projects and reports.
- Excellent exposure in organizing research data and prepare presentations.

Research Outcomes

Patents

- A Simple and Economical Processing Route for Preparing MnBi Magnetic Powder, Kolkata IPO, Application no. 201931009142, and Date of publication: 2019/4/26.

Review Paper

- The Journal of the Minerals, Metals & Materials Society, Springer, "Synthesizing the hard magnetic low-temperature phase of MnBi alloy: Challenges and prospects", 2020.

Full length research paper

- Ceramic International titled, "In situ synthesis, fabrication and rietveld refinement of the hydroxyapatite/titania composite coatings on 316L SS", 2014.
- Journal of Engineering and Technology titled, "Preparation of FeCo/Cu core shell magnetic nanoparticles", 2017.
- Key Engineering Materials titled, "Magnetic behaviour of FeCo/Cu core shell nanoparticles", 2017.

- Solar Energy Materials and Solar Cells, "Delineating the role of surface characteristics on the solar selectivity of colored chromium oxide coating on 304 stainless steel substrate", 2018.
- Materials Today Proceedings, "Effect of annealing treatments on the magnetic properties of FeCo/Cu core shell nanostructures", 2018.
- Journal of Engineering Tribology, "Tribological characteristics of thermo-mechanically processed 7075 Al-alloy through nano-scratch characterization", 2021.

Conferences (National/International)

- 27th National Symposiums on Plasma Science & Technology (PLASMA-2012) at Pondicherry, India.
- International Conference on Nanoscience and Nanotechnology and Advanced Materials (NANOS-2015) at Vizag, India.
- International Conference on Processing of Materials, Minerals and Energy (PMME 2016) at Ongole, India.
- 3rd Annual International Conference on Material Science, Metal and manufacturing (M3 2016) at Singapore.

Skills

Technical Skills

- Hands on experience in analytical research instruments: **AFM/ MFM** (Bruker, Dimension Edge), **Powder XRD** (Bruker, D8 Advanced), **High temperature TG/DSC** (Netzsche, F3 Jupiter), **High energy planetary ball mill** (Fritsch, classic line P6 and P7), **Nano-indentation** (CSM, Anton Paar).
- Data analysis on the following research instruments: XRD, VSM, FT-IR, TGA/DSC, SEM, FESEM & EDXA, TEM, AFM/MFM.
- Operation and calibration of **High temperature tube furnace** and **Vacuum furnace**.
- Operation of Atmosphere controlled magnetic field annealing furnace.

Research and Analytical Software Skills

- **GSAS-EXPGUI** and **TOPAS** for Rietveld analysis.
- **Nanoscope Analysis** and **GWYDDION** for AFM and MFM image analysis.
- **Pyris manager** for TG-DSC data analysis.
- **Image-J** image analysis software.
- **Origin** and **Excel** to plot data.

Work History

07.2018 - 12.2021

Senior Research Fellow

Science and Engineering Research Board, DST - IEST, Shibpur, Howrah, India

Key Deliverables:

- Synthesis of nano-scale FeCo and MnBi alloy powders via mechanical alloying route.
- Coating of Cu has been made over FeCo nano-powder using electrochemical route and prepare core-shell FeCo/Cu nanostructures.
- Develops high performance permanent magnets using exchange spring concept with FeCo/Cu and MnBi.

12.2015 - 05.2018

Senior Research Fellow

Center of Excellence, TEQIP-II - IEST, Shibpur, Howrah, INDIA

Key Deliverables

- Operation and handling research instruments like AFM, MFM, XRD, VSM.

- Analyze the data using analytical tools.
- Organized the research data and prepare project reports.
- Prepare presentations for workshops and conferences.

12.2013 - 12.2015

Junior Research Fellow

Center of Excellence, TEQIP-II - IEST, Shibpur, Howrah, India
Key deliverables:

- Conducted and evaluated research using cutting-edge technology.
- Develop micro-structurally designed advanced materials.
- Characterized the developed materials with analytical instruments.
- Analyzed data to determine which theory to select for further research.

09.2009 - 12.2010

Graduate Engineer Trainee

Energy Engineering Services Pvt. Ltd. - Kolkata, West Bengal, India
Key Deliverables:

- Working as a service engineer at power plants.

Education

- PhD, Engineering Metallurgy & Materials Engineering, IEST - Shibpur, West Bengal
- 2013 • M.Tech, Nanoscience and Technology, Pondicherry University - Puducherry
GPA: 82.90
- 2009 • B.Tech, Electrical Engineering, West Bengal University of Technology - WBUT
GPA: 74.30
- 2003 • Higher Secondary (10+2), Pure Science, West Bengal Council of Higher Secondary Education - WBCHSE
(achieved 61.60% with 1st division)
- 2001 • Madhyamik Pariksha (10th), Science, West Bengal Board of Secondary Education - WBBSE
(achieved 69.00%, 1st division)

Languages

English
Bengali

Hindi

PERSONAL DETAILS

Date of birth: 09.01.1985
Nationality: Indian
Sex: Male
Marital status: Married
Father's name: Anil Chandra Sarkar
Hobby: Listening Music, Technical analysis of chart and patterns

Declaration

I hereby declare that all the above-stated information is true to the best of my knowledge.

Signature: Angshuman Sarkar
Date: 28/04/2022