Short Bio-data

Name: Dr. Prasanta Chowdhury

Designation: Chief Scientist

Division: Surface Engineering Division

Area of Expertise: 2-dimensional nano magnetic ultra-thin films, magnetic sensor, device fabrication

Specialization: Physics of thin films and devices, GMR, TMR and AMR.

No of Ph.D. student guided: 8

Publiications (last 5 years)

1. U. P Borole, H.C. Barshilia, C.M. Ananda, **P. Chowdhury,** Design, development and performance evaluation of GMR-based current sensor for industrial and aerospace applications, IEEE Sensors Journal, **23**, 12687-12694, 2023

2. T. C Gawade, U. P Borole, B. Behera, J. Khan, H. C Barshilia, **P. Chowdhury,** Giant magneto-resistance (GMR) spin-valve based magnetic sensor with linear and bipolar characteristics for low current detection, Journal of Magnetism and Magnetic Materials, **573**, 170679, 2023.

3. B. Behera, U. P. Borole, T. C. Gawade, J Khan, H. C. Barshilia**, P Chowdhury,** Design and development of submersible hydrostatic level sensor using a GMR sensor, Measurement, **206**, 112310, 2023.

4. Umesh P. Borole, Jakeer Khan, Harish C. Barshilia, P. Chowdhury, Design, fabrication, and characterization of giant magnetoresistance (GMR) based open-loop current sensor with U-shaped current carrying conductor, Sensors and Actuators: A. Physical 332 (2021) 113103.

5. Sreevidya P. V. Umesh P.Borole, Reshma Kadam Jakeer Khan, Harish C. Barshilia, and P.Chowdhury, A novel AMR based angle sensor with reduced harmonic errors for automotive applications, Sensors and Actuators A: Physical, **324**, 112573, 2021.

6. Bhagaban Behera, Umesh P Borole, Amal Sivaji, Jakeer Khan, Pradeep Kumar, CM Ananda, Harish C Barshilia, **P Chowdhury**, Jitendra J Jadhav, Design and development of GMR based low range pressure sensor for medical ventilator application, **Sensors and Actuators A: Physical** 321, (2021) 112581 (**I. F. 3.4**).

7. Kiruba Mangalam, S.Ann Susan Jose, Prajwal K., Prasanta Chowdhury and Harish C .Barshilia, Sputter deposited p-NiO/n-SnO2 porous thin film heterojunction based NO2 sensor with high selectivity and fast response, Sensor and Actutor B: chemical, 310, 127830, 2020

8. Usama Abbasi, Prasanta Chowdhury, Sasikala Subramaniam, Prakhar Jain, Nitin Muthe, Faisal Sheikh, Subham Banerjee and V. Kumaran, A cartridge-based Point-of-Care device for complete blood count, Scientific report, 9, 18583, 2019.

9. Sreevidya P. V, Umesh P Borole , Tejaswini Gawade , Jakeer Khan , C. L. Prajapat , Yogesh Kumar , Harish C. Barshilia and **P. Chowdhury**, MgO based specular spin valve with reversible minor loop and higher exchange bias for futuristic linear magnetic field sensor, **469**, 2019 165292, 2019 .

10. Piu Rajak, P.D. Kulkarni, M. Krishnan, P. Chowdhury, Somnath Battachary, Spatially resolved structure and domain wall propagation in defect induced SmCo/Co exchange spring magnetensor, Journal of Magnetism and Magnetic Materials, 491 165612, 2019

11. Sreevidya P. V , Umesh P Borole , Tejaswini Gawade , Jakeer Khan , C. L. Prajapat , Yogesh Kumar, Harish C. Barshilia and **P. Chowdhury,**.Evolution of magnetoresistance behaviour at low temperatures in naturally oxidised specular spin valve systems, Journal of Magnetism and Magnetic Materials 481, 170-175, 2019.

12. Prabhanjan D. Kulkarni, P. V. Sreevidya, Jakeer Khan, P. Predeep, Harish C.Barshilia, **P. Chowdhury**, "Reduction in magnetic exchange bias in CoFe/FeMn/CoFe trilayers due to reduced pinned uncompensated moments in AFM laye", Journal of Magnetism and Magnetic Materials, 472, 111-114, 2018.

13. Umesh P. Borole, Sasikala Subramaniam, Ishan R. Kulkarni, P. Saravanan, Harish C. Barshilia, **P. Chowdhury**, "Highly sensitive giant magnetoresistance (GMR) based ultralow differential pressure sensor" , Sensors and Actuators A, 280, 125-131, 2018.

14. S. Dhanush, M. Sreejesh, K. Bindu**, P. Chowdhury**, H.S. Nagaraja, "Synthesis and electrochemical properties of silver dendrites and silver dendrites/rGO composite for applications in paracetamol sensing" , Materials Research Bulletin, 100, 295–301, 2017.

15. P.V.Sreevidya , JakeerKhan, Harish C.Barshilia, C.M.Ananda , **P. Chowdhury**"Development of two axes magnetometer for navigation applications" , Journal of Magnetism and Magnetic Materials, 448, 298-302, 2017.

16. Sellarajan B, P. Saravanan, S.K. Ghosh, Nagaraja, H. S. Harish C. Barshilia and **Chowdhury P,** Shape induced magnetic vortex state in hexagonal ordered CoFe nanodot arrays using ultrathin alumina shadow mask, Journal of Magnetism and Magnetic Materials, 451,51-56, 2017.

17. M. Krishnan, P. Predeep, D.V. Sridhara Rao, C.L. Prajapat, M.R. Singh, HarishC. Barshilia and **P. Chowdhury**, "High coercivity Sm-Co thin films from elemental Sm/Co multilayer deposition and their microstructural aspects"Journal of Magnetism and Magnetic Materials, 430 (2017), 47-51, 2017

18. S. Sasikalaa, K.T. Madhavan, G. Ramesh, S. Saggar, P. Predeep and **P. Chowdhury**, "Electro-mechanical response to the harmonic actuation of the pneumatically coupled dielectric elastomer based actuators with and without load", International Journal of Solids and Structures, 110-111, 58-86,2017.

Subject area willing to guide the student: Spin dependent quantum tunneling through a ultrathin oxide barrier and resistive switching device Or Magnetic Random Accesses Memory. CSIR-NAL has a unique facility to develop a micron/nano size pillar structure to understand the physics of spin dependent quantum tunneling.

Condensed Matter Physics/ Electronics.