

Curriculum Vitae

Asit Kumar Kar

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Education

- Ph.D., Condensed Matter Physics (Expt.): **Indian Institute of Technology Kharagpur** 2001
- M.Sc., Physics: **Visva Bharati University**, Shantiniketan 1992
- B.Sc. Honours, Physics: **University of Calcutta** 1989

Professional Experience

- Associate Professor* Jun., 2011 – Present
Indian School of Mines, Dhanbad
- Assistant Professor* Jun., 2008 – Jun., 2011
Indian School of Mines, Dhanbad
- Postdoctoral Research Fellow* Feb., 2008 – Jun., 2008
Raja Ramanna Centre for Advanced Technology, Indore
- Postdoctoral Research Associate* Mar., 2006 – Jun., 2007
Rensselaer Polytechnic Institute, Troy, New York, USA
- Postdoctoral Research Associate* Oct., 2001 – Feb., 2006
University of Alabama in Huntsville, USA
- Postdoctoral Junior Researcher* Feb., 2000 – Oct., 2001
National Institute for Materials Science, Nagoya \Tsukuba, Japan
- Senior Research Fellow* Sep., 1999 – Feb., 2000
Indian Institute of Technology, Kharagpur

Research Experience

- Diamond like Carbon (DLC) thin films;
- Niobium thin films for applications in RF cavities of accelerators;
- Assembly and studies of oblique angle deposited nanowires (3D nanostructures, nanosculptured film);
- Microcantilever based microelectromechanical (MEMS) array sensor devices for the detection of physical, chemical and biological agents and phenomena;
- Self-assembly of supramolecular harmonic structures and studies on nanometre-scale quantum interaction between electrons and electromagnetic fields for single molecular photonic devices;
- Nanolithography by STM – creation of nanostructures on metallic thin film and molecular nanowires on semiconducting surface;
- Effect of microstructure on the colossal magnetoresistive properties of manganite thin films;
- Semiconductor thin films of Telluride, Selenides and Indium tin oxide.

Teaching Experience

Indian School of Mines, Department of Applied Physics, Dhanbad:

Courses	Programme	Semesters
Fundamentals of Solid State Physics	Integrated M.Sc. V	Monsoon: 2011 – 2008
Physics I	Preparatory I	Monsoon: 2011 – 2008
Plasma Physics	Integrated M.Sc. VI	Winter: 2011 – 2009
Physics of Nanomaterials	M.Sc. IV	Winter: 2011 – 2009
Physics Laboratory	M.Phil., M.Sc., Integrated M.Sc., B.Tech., Preparatory	
Laser	M.Sc. III	Monsoon: 2009 & 2008
Innovative Experimental Methods in Physics	Integrated M.Sc. VI	Winter: 2009

University of Alabama in Huntsville, Physics Department, USA:

Electronics (Lecture and Laboratory) | B.S. | Fall 2004

Indian Institute of Technology, Kharagpur, Department Physics and Meteorology:

Physics Laboratory	M.Sc., B.Tech.	1994 – 2000
Physics Tutorial	Preparatory	1994

Supervisory

On research, project and training dissertations:

Ph.D.	M.Phil.	Int. M.Sc.	M.Sc.	Summer Training
1 (On progress)	2	2	4	1 (M.Sc.)

Specialisation

Experimental micro and nanoscience

Research Interests

Nanoscience and technology; Thin film; Scanning Probe Microscopy; Molecular electronics & photonics; Microcantilever sensors.

Technical Skills

- Thin film deposition – PVDs (Thermal, E-beam, Flash, Oblique angle), Sputtering (DC and RF magnetron), Electrochemical;
- Scanning Probe Microscopy (UHV VT STM, BEEM, Photon STM, AFM, Magnetoresistive STM, MFM, Conducting AFM);
- Four probe electric and magnetic measurements (variable temperature);

- Vibrating sample magnetometer;
- Spectrophotometer;
- Microcantilever sensor systems (optical, piezoresistive);
- Vacuum techniques;
- Instrumental development;
- Data acquisition, computer programming and interfacing; LabVIEW, VEE Pro, SoftWIRE;
- Electronic circuit and PCB design;
- Analytical: Fractal, SEM, TEM, HRTEM, TED, EDAX, EELS, XRD, XRR.

Doctoral Thesis

“Scanning Tunneling Microscopic and Spectroscopic Investigations of Colossal Magnetoresistive Manganites”

National Scholarships

- **Council of Scientific and Industrial Research (CSIR):** Senior Research Fellowship, 1997
- **Graduates' Aptitude Test for Engineers (GATE):** Research Fellowship, 1994
- **National Eligibility Test (NET):** Junior Research Fellowship and eligibility for Lectureship, University Grant Commission (UGC), 1993

Others

- Authored and co-authored 16 articles in international journals and 19 conference presentations
- Delivered 12 contributory and invited lectures