

Curriculum Vitae (Last updated July 2013)

Name: Arindam Ghosh

Address and contact Department of Physics
Indian Institute of Science
Bangalore 560012
Karnataka
India.

Tel: (080) 22933288
Email: arindam@physics.iisc.ernet.in

Institution Address: Indian Institute of Science
Bangalore 560012
Karnataka
India.

Designation: Associate Professor

Academic and Professional details:

PhD	1999	Indian Institute of Science
Postdoctoral Research Associate	2000 – 2005	Cavendish Laboratory, Cambridge University, UK.
Assistant Professor	2006 - 2011	Indian Institute of Science, Bangalore.
Associate Professor	2011 - Present	Indian Institute of Science, Bangalore.

Research Area Specialization Experimental condensed matter physics
Electronic, opto-electronic and thermodynamic properties of atomically thin semiconductor membranes, novel two-dimensional electron gases, and nano-scale conductors

Technical expertise

- Ultra-low Temperature Technology
- Measurement technology ultra-low level electrical signal
- Semiconductor device fabrication, high-resolution lithography
- Opto-Electronics with atomically thin semiconductors

Awards and distinction

- Indian Institute of Science Alumni Association scholarship (1992)
- Registered as a recognized researcher at the Engineering and Physical Sciences Research Council (EPSRC), UK (2005).
- The UK-India Education and Research Initiative award (2006).
- IBM-IUSSTF visiting fellowship in Nanotechnology (2008).
- SwarnaJayanti Fellowship, Government of India (2007 – 2008).
- MRSI medal (2012).
- Shanti Swarup Bhatnagar Prize (2012).

Patents

1. Method to enhance the sensitivity of a metallic piezoresistive transducer and device thereof (National patent filed, 2010)
2. A non-volatile opto-electronic memory/switching device from atomically thin binary hybrids of Graphene and Molybdenum di-Sulphide (MoS_2) (National patenting in progress, 2013)

- Professional activities
- Over 100 research papers in International journals and conferences
 - Reviewer for papers in various journals including those from the American Chemical Society, American Physical Society, and the American Institute of Physics
 - Past and ongoing collaborative activities and exchange: National: Tata Institute of fundamental Research, University of Delhi. International: University of Cambridge, UK, University College London, UK, University of Exeter, UK, University of New South Wales, Australia, IBM T. J. Watson Research Center Yorktown Heights (USA), EIRIS Toyohashi University (Japan), Harvard University (USA), University of Groningen (Netherlands)
 - Industrial ties: Tokyo Electron Limited, IBM
 - Coordinator Integrated PhD programme
 - Outreach activities: Designed experiments for Asian Physics Olympiad, Authored "Graphene and the revolution in nanoscale electronics", for *Physics News (Bulletin of Indian Physics Association)* (2011), Co-authored "Nowhere man", *Nature India* 2010 - An article on postdocral research scenario in India, (<http://www.nature.com/nindia/2010/100531/full/nindia.2010.73.html>)
- Synergistic activities
- Member, American Physical Society (Aug 2011 - present).
 - Member, Indian Physics Association (Mar 2011 - present)
 - Member, Program Review Committee, International Center for Theoretical Sciences
- Visiting assignments and positions
- University of Cambridge (May - June 2005)
 - USA, IBM T. J. Watson Research Center, Yorktown Heights (May - Sept 2009)
- Books
1. Noise in Graphene Transistors, A. N. Pal and A. Ghosh, Chapter 13, Page 199, "Graphene and Its Fascinating Attributes" *Ed.* S. Pati, T. Enoki and C. N. R. Rao (World Scientific 2011)
 2. Physics of Electrical Noise in Graphene, V. Kochat, S. Goswami, A. N. Pal and A. Ghosh, Chapter 5, Page 159, "Graphene: Synthesis, Properties, and Phenomena" *Ed.* C. N. R. Rao and A. K. Sood (Wiley-VCH 2012)

List of publications in last five years:

Sl	Authors	Title of Paper	Journal/Vol/Page/Year
1	Chandni U., P. Kundu, N. Ravishankar, and A. Ghosh	Tunability of electronic states in ultrathin nanowires of gold	Advanced Materials DOI: 10.1002/adma.201204493 (2013)
2	A. N. Pal, V. Kochat and A. Ghosh	Direct observation of valley-coherent states and nontrivial universal symmetry of graphene	Physical Review Letters 109 , 196601 (2012).
3	V. Narayan, M. Pepper, J.Griffiths, H. E. Beere, F. Sfigakis, G. Jones, D. A. Ritchie, and A. Ghosh	Unconventional Metallicity and Giant Thermopower in a Strongly Interacting Two Dimensional Electron System	Physical Review B 86 , 125406 (2012)
4	Md. A. Aamir, S. Goswami, M. Baenninger, V. Tripathi, M. Pepper, I. Farrer, D. A. Ritchie, and A. Ghosh	Colossal non-saturating linear magnetoresistance in two-dimensional electron systems at a GaAs/AlGaAs heterointerface	Physical Review B 86 , 081203 (R) (2012) (Editor's Suggestion)
5	S. M. Mohanasundaram, Rudra Pratap and Arindam Ghosh and A. Ghosh	Electromigration: A unique tool for microstructure engineering in metal films	International Journal of Applied Physics and Mathematics 2 , 146 (2012)
6	S. M. Mohanasundaram, Rudra Pratap and Arindam Ghosh and A. Ghosh	Two orders of magnitude increase in metal piezoresistor sensitivity through nanoscale inhomogenization	Journal Of Applied Physics 112 , 084332 (2012)
7	S. M. Mohanasundaram, Rudra	Tuning the sensitivity of a metal-	Journal of Microelectro-

- Pratap and Arindam Ghosh and **A. Ghosh**
- 8 M. Padmanabhan, K. Roy, Gopalakrishnan R., S. Raghavan, and **A. Ghosh**
- 9 P. Kundu, U. Chandni, **A. Ghosh** and N. Ravishankar
- 10 S. Goswami, M. A. Aamir, C. Siegert, M. Pepper, I. Farrer, D. A. Ritchie and **A. Ghosh**
- 11 S. Ghatak, A. N. Pal and **A. Ghosh**
- 12 S. Shamim, S. Mahapatra, C. Polley, M. Y. Simmons, and **A. Ghosh**
- 13 A. Singh and **A. Ghosh**
- 14 V. Kochat, A. N. Pal, Sneha E. S., Arjun B. S., A. Gairola, S. A. Shivashankar, S. Raghavan and **A. Ghosh**
- 15 U. Chandni, P. Kundu, A. K. Singh, N. Ravishankar and **A. Ghosh**
- 16 A. N. Pal, S. Ghatak, V. Kochat, Sneha E. S., Arjun B. S., S. Raghavan and **A. Ghosh**
- 17 Koushik R., M. Baenninger, V. Narayan, S. Mukerjee, M. Pepper, I. Farrer, D. A. Ritchie and **A. Ghosh**
- 18 S. Goswami, C. Siegert, M. Pepper, I. Farrer, D. A. Ritchie, and **A. Ghosh**
- 19 S. Mukhopadhyay, A. Singh and **A. Ghosh**
- 20 S. Goswami, C. Siegert, S. Shamim, M. Pepper, I. Farrer, D. A. Ritchie and **A. Ghosh**
- 21 A. N. Pal, A. A. Bol and **A. Ghosh**
- 22 A. Singh, S. Mukhopadhyay and **A. Ghosh**
- 23 Koushik R. and **A. Ghosh**
- 24 U. Chandni and **A. Ghosh**
- 25 U. Chandni, S. Kar-Narayan, **A. Ghosh**, H. S. Vijaya and S. Mohan
- 26 A. Singh, D. Chowdhari and **A. Ghosh**
- 27 A. N. Pal and **A. Ghosh**
- 28 S. Goswami, C. Siegert, M. Baenninger, M. Pepper, I. Farrer, D. A. Ritchie, and **A. Ghosh**
- 29 M. Baenninger, **A. Ghosh**, M. Pepper, H. E. Beere, I. Farrer and D. A. Ritchie
- based piezoresistive sensor using electromigration
- Electrochemical integration of graphene with light absorbing copper-based thin films
- Pristine, adherent ultrathin gold nanowires on substrates and between pre-defined contacts via a wet chemical route
- Transport through an electrostatically defined quantum dot lattice in a two-dimensional electron gas
- Nature of electronic states in atomically thin MoS₂ field-effect transistors
- Suppression of low-frequency noise in two-dimensional electron gas at degenerately doped Si:P δ -layers
- Domain-wall creep driven by spin torque in nanoscale ferromagnetic cylinders
- High contrast imaging and thickness determination of graphene with in-column secondary electron microscopy
- Insulating State and Breakdown of Fermi Liquid Description in Molecular-Scale Single-Crystalline Wires of Gold
- Microscopic mechanism of 1/f noise in graphene: Role of energy band dispersion
- Evidence of gate-tunable topological excitations in two-dimensional electron systems
- Signatures of an Anomalous Nernst Effect in a Mesoscopic Two-Dimensional Electron System
- Field-tunable stochasticity in the magnetization reversal of a cylindrical nanomagnet
- Thermoelectric properties of electrostatically tunable antidot lattices
- Large low-frequency resistance noise in chemical vapor deposited graphene
- Tracking random walk of individual domain walls in cylindrical nanomagnets with resistance noise
- Design of a cryogenic amplifier using GaAs MESFET
- A simple kinetic sensor to structural transitions
- A fluctuation-based characterization of athermal phase transitions: Application to shape memory alloys
- Resistivity noise in crystalline magnetic nanowires and its implications to domain formation and kinetics
- Ultra-low noise field-effect transistor from multilayer graphene
- Highly enhanced thermopower in high-mobility two-dimensional electron systems at milliKelvin temperatures
- Magnetic field induced instabilities in localized two-dimensional electron systems
- mechanical Systems** **21**, 1276 (2012)
- Journal of Physical Chemistry C** **116**, 1200 (2012)
- Nanoscale** **4**, 433 (2012)
- Physical Review B** **85**, 075427 (2012)
- ACS Nano** **5**, 7707 (2011)
- Physical Review B** **83**, 233304 (2011)
- Physical Review B (Rapid Communications)** **84**, 060407 (2011)
- Journal of Applied Physics** **110**, 014315 (2011).
- ACS Nano** **5**, 8398 (2011)
- ACS Nano** **5**, 2075 (2011)
- Physical Review B** **83**, 085302 (2011)
- Physical Review B** **83**, 073302 (2011)
- Physical Review B** **82**, 172404 (2010)
- Applied Physics Letters** **97**, 132104 (2010)
- Applied Physics Letters** **97**, 133504 (2010)
- Physical Review Letters** **105**, 067206 (2010)
- Indian Journal of Cryogenics** **35 (1-4)**, 391 (2010)
- Physical Review B** **81**, 134105 (2010)
- Acta Materialia** **57**, 6113 (2009)
- Applied Physics Letters** **95**, 092103 (2009)
- Applied Physics Letters** **95**, 082105 (2009)
- Physical Review Letters** **103**, 026602 (2009)
- International Journal of Modern Physics B** **23**, 2708 (2009)

- 30 S. Sarkozy, K. Das Gupta, C. Siegert, **A. Ghosh**, I. Farrer, H. E. Beere, D. A. Ritchie and G. A. C. Jones
Low temperature transport in undoped mesoscopic structures
Applied Physics Letters 94, 172105 (2009)
- 31 A. N. Pal and **A. Ghosh**
Resistance noise in electrically biased bilayer graphene
Physical Review Letters 102, 126805 (2009)
- 32 U. Chandni, **A. Ghosh**, H. S. Vijaya, S. Mohan
Criticality of tuning in athermal phase transitions
Physical Review Letters 102, 025701 (2009)
- 33 M. Baenninger, **A. Ghosh**, M. Pepper, H. E. Beere, I. Farrer and D. A. Ritchie
Magnetic-field-induced instabilities in localized two-dimensional electron systems
Physical Review B (Rapid Comm.) 78, 161306 (R) (2008)
- 34 A. Singh, T. Phanindra Sai, **A. Ghosh**
Electrochemical fabrication of ultra-low noise metallic nanowires with hcp crystalline lattice
Applied Physics Letters 93, 102107 (2008)
- 35 C. Siegert, **A. Ghosh**, M. Pepper, I. Farrer, D. A. Ritchie, D. Anderson and G. A. C. Jones
Oscillatory Hall effect in high-mobility two-dimensional electron gases
Physical Review B (Rapid Comm.) 78, 081302(R) (2008) (Editor's selection)
- 36 C. Siegert, **A. Ghosh**, M. Pepper, I. Farrer, D. A. Ritchie, D. Anderson and G. A. C. Jones
Effect of orbital interference on the density of states of high-mobility two dimensional electron systems
Physical Review B 78, 073302 (2008)
- 37 Chandni U., **A. Ghosh**, H. S. Vijaya and S. Mohan
Signature of martensitic transformation on conductivity noise in thin films of NiTi shape memory alloys
Applied Physics Letters 92, 112110 (2008)
- 38 A. Singh and **A. Ghosh**
Stabilizing high-energy crystal structure of metallic nanowires with under-potential electrochemistry
Journal of Physical Chemistry C 112, 3460 - 3463 (2008)
- 39 C. Siegert, **A. Ghosh**, M. Pepper, I. Farrer, D. A. Ritchie, D. Anderson and G. A. C. Jones
Sensitivity of the magnetic state of a spin lattice on itinerant electron orbital phase
Physica E - Low-Dimensional Systems & Nanostructures 40, 1460 - 1463 (2008)
- 40 M. Baenninger, **A. Ghosh**, M. Pepper, H. E. Beere, I. Farrer, P. Atkinson and D. A. Ritchie
Quantization of hopping magnetoresistance prefactor in strongly correlated two-dimensional electron systems
Physica E - Low-Dimensional Systems & Nanostructures 40, 1347 - 1350 (2008)
- 41 C. Siegert, **Arindam Ghosh**, M. Pepper, I. Farrer, D. A. Ritchie, D. Anderson and G. A. C. Jones
Field-tunable magnetic phases in a semiconductor-based two-dimensional Kondo lattice
Physica E - Low-Dimensional Systems & Nanostructures 40, 942 - 948 (2008)
- 42 M. Baenninger, **A. Ghosh**, M. Pepper, H. E. Beere, I. Farrer and D. A. Ritchie
Low-Temperature Collapse of Electron Localisation in Two Dimensions
Physical Review Letters 100, 016805 (2008)