



Faculty Details proforma for DU Web-site

Title	Prof./Dr./Mr./Ms./Mrs.	First Name	Ajit	Last Name	Mahapatro	Photograph
Designation		Assistant Professor				
Address		Office: Department of Physics and Astrophysics University of Delhi, Delhi 110007				
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Residence						
Mobile		+91 – 9871074984				
Email		ajit.km001@gmail.com				
Web-Page						
Educational Qualifications						
Degree		Institution			Year	
Ph.D.		Jawaharlal Nehru University, New Delhi			2003	
M.Phil. / M.Tech.						
PG		Berhampur University, Berhampur, Orissa			1995	
UG		Berhampur University, Berhampur, Orissa			1993	
Any other qualification						
Career Profile						
Research Associate		Department of Physics Syracuse University, Syracuse, NY, USA Lab: Cornell Nanofabrication Facility Cornell University, Ethaca, NY, USA			2010	
Post-doctoral Research Associate		Birck Nanotechnology Center School of Electrical and Computer Engineering Purdue University, West Lafayette, IN, USA			2003-2009	
Administrative Assignments						
Member of Committees in the Department of Physics and Astrophysics, University of Delhi:						
<ul style="list-style-type: none"> • Executive Committee • Purchasing Committee • Time Table Committee • Staff Advisory Committee for the Physical Society 						
Areas of Interest / Specialization						
<p>Research Areas Pursued: Micro/nano-fabrication, Nanotechnology, Nanoelectronics, Biotechnology, Molecular electronics, Electronic transport through micro/nano-structured organic/bio-functionalized systems, Organic thin film electronics, Biophysics, Nanopore engineering, and Microelectromechanical system.</p> <p>-----</p> <p>Research Interest: Designing, fabrication, and characterization of nanomaterial devices for nanobioelectronics and biotechnology using advanced nanotechnology tools, Thermoelectrics, and Magnetic Hyperthermia</p> <ul style="list-style-type: none"> • Micro/nano-meter scale device structure designing and optimization for nano/bio-technology • Device engineering using micro/nano-fabrication, semiconductor processing, and molecular self assembly techniques • Electronic transport and optical properties of organic/bio-functionalized nano-structured systems containing single/few-organic/bio-molecules and organic thin film devices • Thermoelectric properties of hot-pressed pellets containing nanostructured composites • Interaction of magnetic nanoparticles with live cells for utilization in magnetic fluid hyperthermia • Translocation of single bio-molecular entity through solid state nanopores and their utilization in biomedical applications • Microelectromechanical system (MEMS) based capacitive switches 						

Subjects Taught
<p>M. Sc. (Physics) I & II Semesters: Solid State Physics (Lab.) III & IV Semesters: Solid State Physics (Lab.)</p> <p>M. Tech. in Nanoscience and nanotechnology: NSNT 203: Solid State Physics NSNT 204: Chapter - Lithographic Techniques NSNT 401: Properties of Nanostructured Materials NSNT 501: Molecular Electronics NSNT 504: Practical Projects in Nanoelectronics and biosensors</p> <p>Currently Teaching: M. Sc. (Physics) III & IV Semesters: Nanomaterials (Lab.) IV Semesters: Nanoscale Physics</p>
Research Guidance
<p>Supervisor to Ph. D Students: Mrs. Pooja Shaini (Joined in Jan. 2014) Mr. Satish Kumar (Joined in Oct. 2014) Mr. Raj Kumar Gupta (Joined in Feb. 2015) Mrs. Sheetal Issar (Joined in Feb. 2015)</p>
Publications Profile
<p><i>Research papers published in Refereed/Peer Reviewed Journals</i></p> <ul style="list-style-type: none"> • S. K. Bhardwaj, P. Yadav, S. Ghosh, and T. Basu, A. K. Mahapatro, "Electrochemically Reduced Graphene Oxide on ITO for Bio-sensing Applications," ACS ADVANCED MATERIALS AND INTERFACES, Accepted (2016). • R. K. Gupta, R. Sharma, A. K. Mahapatro, and R. P. Tandon, "The effect of ZrO₂ dispersion on the thermoelectric power factor of Ca₃Co₄O₉," PHYSICA B: CONDENSED MATTER, 483, 48–53 (2016). • Rekha, R. Medwal, P. Sharma, A. K. Mahapatro, S. Annapoorni, "Effect of Pt layers on chemical ordering in FePt thin films," SUPERLATTICES AND MICROSTRUCTURES, Vol. 64, p-408 (2013). • J. W. Lee, A. K. Mahapatro, D. Peroulis, and A. Raman, "Vibration based monitoring of dielectric charging and electric fields in RF-MEMS witches," ASME/IEEE JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, 19, 1490 (2010). • A. K. Mahapatro, G. U. Lee, K. J. Jeong, and D. B. Janes, "Stable and Reproducible Electronic Conduction through DNA Molecular Junctions," APPLIED PHYSICS LETTERS, 95, 083106 (2009). • A. K. Mahapatro, J. Ying, T. Ren, and D. B. Janes, "Electronic Transport through Ruthenium Based Redox-Active Molecules in Metal-Molecule-Metal Nanogap Junctions," NANO LETTERS, 8 (8), 2131 (2008). • R. Agrawal, P. Kumar, S. Ghosh, and A. K. Mahapatro, "Thickness Dependence of Space Charge Limited Current and Injection Limited Current in Organic Molecular Semiconductors," APPLIED PHYSICS LETTERS, 93, 073311 (2008). • A. K. Mahapatro, K. J. Jeong, G. U. Lee, and D. B. Janes, "Sequence Specific Electronic Conduction through Polyion-Stabilized Double-Stranded DNA Molecules in Nanoscale Break Junctions," NANOTECHNOLOGY, 18, 521, Article # 195202 (2007). • A. K. Mahapatro and D. B. Janes, "Electrical Readouts of Single and Few Molecule Systems in Metal-Molecule-Metal Device Structures," JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, 7, 2134 (2007). • A. K. Mahapatro and S. Ghosh, "Charge Carrier Transport in Metal-phthalocyanine Based Disordered Thin Films," JOURNAL OF APPLIED PHYSICS, 101, 034318 (2007). • A. K. Mahapatro, A. Scott, A. Manning, and D. B. Janes, "Gold Surface with Sub-nm Roughness Realized by Evaporation on a Molecular Adhesion Monolayer," APPLIED PHYSICS LETTERS, 88, 151917 (2006). • A. K. Mahapatro, S. Ghosh, and D. B. Janes, "Nanometer Scale Electrode Separation (Nano-gap) Using Electromigration at Room Temperature," IEEE TRANSACTIONS ON NANOTECHNOLOGY, 5, 232 (2006). • A. K. Mahapatro, N. Sharkar, and S. Ghosh, "Anomalous Behavior of Conductivity at Low Temperature in Metal-Phthalocyanine Based Molecular Semiconductors," APPLIED PHYSICS LETTERS, 88, 162110 (2006). • S. Ghosh, H. Halimun, A. K. Mahapatro, J. Choi, S. Lodha, and D. B. Janes, "Device Structure for Electronic Transport through Individual Molecules Using Nanoelectrodes," APPLIED PHYSICS LETTERS, 87, 233509 (2005). • A. K. Mahapatro, R. Agrawal, and S. Ghosh, "Electric-field-induced Conductance Transition in 8-Hydroxyquinoline Aluminum(Alq₃)," JOURNAL OF APPLIED PHYSICS, 96, 3583 (2004). • A. K. Mahapatro and S. Ghosh, "Schottky Energy barrier and charge injection in Metal/Copper-Phthalocyanine/Metal Structures," APPLIED PHYSICS LETTERS, 80, 4840 (2002). • A. K. Mahapatro and S. Ghosh, "High Rectification in Metal-Phthalocyanine Based Single layer Devices," IEEE TRANSACTIONS ON ELECTRON DEVICES, 48, 1911 (2001).

Research papers Submitted for publication in Refereed/Peer Reviewed Journals

- M. Singh, P. Saini, R. P. Tandon, **A. K. Mahapatro**, and S. P. Singh, "Efficient bipolar resistive switching in annealed graphene oxide thin film" Submitted to **JOURNAL OF CHEMISTRY (2016)**.
- S. K Bhardwaj, R. Chauhan, **A. K. Mahapatro**, T. Basu, "Benzymatic triglyceride biosensor based on electrochemically reduced graphene oxide," Submitted to **BIOSENSORS AND BIOELECTRONICS (2016)**.
- R. K. Gupta, R. Sharma, **A. K. Mahapatro**, and R. P. Tandon, "Influence of Terbium and Zinc co-doping on the Thermoelectric Properties of $\text{Ca}_3\text{Co}_4\text{O}_9$ Ceramics," Submitted to **PHYSICA SCRIPTA (2016)**.
- S. K. Bhardwaj, P. Yadav, S. Ghosh, **A. K. Mahapatro**, and Tinku Basu, "Self-assembled reduced graphene oxide electrode for detection of triglyceride using surface plasmon resonance, Submitted to **ADVANCED MATERIALS LETTERS (2016)**.
- N. Puri, R. K. Gupta, A. K. Pattanaik, R. P. Tandon, and **A. K. Mahapatro**, "Solvothermal synthesis of cobalt antimonide as thermoelectric material," Submitted to **ADVANCED MATERIALS LETTERS (2016)**.
- P. Saini, Khobaib, P. Gautam, M. Singh, R. P. Tandon, S. P. Singh, and **A. K. Mahapatro**, Functionalization of Polyallylamine on Graphene oxide," Submitted to **ADVANCED MATERIALS LETTERS (2016)**.
- B. Sharma, R. P. Tandon, **A. K. Mahapatro**, "Interaction of ZnO_2 nanoparticle with the fibroblast cells," Submitted to **ADVANCED MATERIALS LETTERS (2016)**.
- R. K. Gupta, R. P. Tandon, and **A. K. Mahapatro**, "Hot-pressed pellets of Al and Ti co-doped $\text{Ca}_3\text{Co}_4\text{O}_9$ for thermoelectrics," Submitted to **ADVANCED MATERIALS LETTERS (2016)**.

Research papers to be Submitted to Refereed/Peer Reviewed Journals

- P. Saini, M. Singh, J. Thakur, R. P. Tandon, R-Y. Ma, S. P. Singh, and **A. K. Mahapatro**, "Efficient bipolar resistive switching in annealed graphene oxide thin film" (2016).
- M. Subramanian, A. Miaskowski, **A. K. Mahapatro**, and J. Dobson, "Drug release analysis system, non-contact in-vitro real time temperature measurements and high flux density module for alternating magnetic field mediated magnetic nanoparticle studies," (2016).
- R. K. Gupta, R. P. Tandon, and **A. K. Mahapatro**, "Thermoelectric Studies of $\text{Ca}_3\text{Co}_4\text{O}_9$ and $\text{Ca}_3\text{Co}_4\text{O}_9/\text{Al-ZrO}_2$ Nano-composites," (2016).
- N. Puri, R. K. Gupta, R. P. Tandon, and **A. K. Mahapatro**, "Thermoelectric Studies of Thallium Doped Bismuth Telluride Nano-composites," (2016).
- G. Kaur, B. Sharma, Sarla, and **A. K. Mahapatro**, "Variation of charge, hydrophobicity, and dipole moment of malaria parasite protein molecules with ph-values," (2016).

Research papers published in Refereed/Peer Reviewed Conferences

- S. K. Bhardwaj, K. Agarwal, R. Chauhan, P. Yadav, **A. K. Mahapatro**, S. Ghosh, and T. Basu "Self-Assembled Graphene Oxide Electrode for Triglyceride Detection using Surface Plasmon Resonance," 3rd National Conference on Photonics and Materials Science (NCPMS-2015), November 18-19, 2015, GJUST, Hissar, Haryana. **Journal of Integrated Science & Technology (2016)**.
- R. K. Gupta, N. Puri, R. Sharma, **A. K. Mahapatro**, R. P. Tandon, "Hot Pressed Pallets of Thallium Doped Bismuth Telluride Nanocomposites for Thermoelectric Devices," 3rd National Conference on Photonics and Materials Science (NCPMS-2015), November 18-19, 2015, GJUST, Hissar, Haryana. **Journal of Integrated Science & technology**
- S. K. Bhardwaj, **A. K. Mahapatro**, T. Basu, "Benzymatic triglyceride biosensor based on electrochemically reduced graphene oxide," **International Journal of Chem. Tech. Research, Vol.7, pp. 858-866, 2015**; Int. Conf. on Nanoscience and Nanotechnology-2015 SRM University, Chennai, India, 4 -6 Feb 2015.
- **A. K. Mahapatro**, J. W. Lee, A. Raman, and D. Peroulis, "Vibration Frequency Shift of RF MEMS Switch Eigenmodes caused by Dielectric Charging," **XV Int. Workshop on the Phy. Semi. Dev., 2009, Dec.16-20, Delhi**.
- A. Garg, J. Small, **A. K. Mahapatro**, X. Liu, D. Peroulis, "Impact of Sacrificial Layer Type on Thin Film Metal Residual Stress," **The 8th Annual IEEE Conf. on Sensors, 25-28 Oct. 2009, Chirstchurch, New Zealand**.
- **A. K. Mahapatro**, J. Chee, and D. Peroulis, "Fully Electronic Method for Quantifying the Post-release Gap-height Uncertainty of Capacitive RF MEMS Switches," **2009 International Microwave Society, June 7-12, 2009, Boston Convention & Exhibition Center, Boston, MA**.
- **A. K. Mahapatro**, K. J. Jeong, G. U. Lee, and D. B. Janes, "**Electrical Behavior of Nano-scale Junctions with Well Engineered Double Stranded DNA Molecules**," **IEEE-Nano2006, July 16th – 20th, 2006, Cincinnati-Ohio, USA**.

- A. K. Mahapatro and D. B. Janes, "Conductivity Measurements of Few Molecule Systems in Metal-Molecule-Metal Device Structures," International Semiconductor Device Research Symposium, Dec.7-9, 2005, Bethesda, MD, USA, **IEEE Conference Proceedings 2005**, pp. 314-315.
- **A. K. Mahapatro** and S. Ghosh, "Current-Voltage Characteristics of Various Structures with Ultrathin Insulating Layer," **10th Int. Workshop on the Phy. Semi. Dev., Dec. 14-18 (1999), New Delhi**, pp.863-866.
- D. Kabiraj, S. Dhar, **A. Mahapatro**, and S. Ghosh, "Thermally Stimulated Current Spectroscopic Study of High Energy Li Ion Irradiated Si-GaAs," **10th Int. Workshop on the Phy. Semi. Dev., p. 239, Dec. 14-18 (1999), Delhi**.
- **A. K. Mahapatro** and S. Ghosh, "Mechanism of charge injection in Metal/Copper-Phthalocyanine/Metal structures," **11th Int. Workshop on the Phy. Semi. Dev., Dec. 11-15 (2001), New Delhi**, pp.213-217.

Research papers Published in Conferences/Seminar other than Refereed/Peer Reviewed Conferences

Abstracts in the Conferences:

- Nidhi Puri, Raj K. Gupta, Akhyaya K. Pattanaik, Ram P. Tandon, and **Ajit K. Mahapatro**, "Solvothermal synthesis of cobalt antimonide as thermoelectric material," International Conference on Materials Science & Technology," International Conference on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India.
- Sheetal K. Bhardwaj, Premlata Yadav, Subhashis Ghosh, **Ajit K. Mahapatro**, and Tinku Basu, "Self-assembled reduced graphene oxide electrode for detection of triglyceride using surface plasmon resonance, International Conference on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India.
- Pooja Saini, Khobaib, Prikshit Gautam, Manjari Singh, Ram P. Tandon, S. P. Singh, and **Ajit K. Mahapatro**, Functionalization of Polyallylamine on Graphene oxide," International Conference on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India.
- Bharti Sharma, Ram P. Tandon, **Ajit K. Mahapatro**, "Interaction of ZnO₂ nanoparticle with the fibroblast cells," Int. Conf. on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India.
- Raj K. Gupta, Ram P. Tandon, and **Ajit K. Mahapatro**, "Hot-pressed pellets of Al and Ti co-doped Ca₃Co₄O₉ for thermoelectrics," International Conference on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India.
- Satish Kumar, Soni Kumari, S. K. Jangir, R. K. Pandey, Anand Kumar, Anshu Goel, R. Raman, P. Mishra, T. Srinivasan, **A.K. Mahapatro**, "Embedded Nanofibre Induced by Low Energy Ion Implantation on GaSb surface," International Conference on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India.
- Sheetal K Bhardwaj, Premlata Yadav, **Ajit K. Mahapatro**, Subhashis Ghosh, Tinku Basu, "Development of a Transparent Electrochemically Reduced Graphene Oxide Electrode and Its Application In Triglyceride Biosensor," IIT Chennai, IEAT-2016.
- Raj K. Gupta, Nidhi Puri, Ram P. Tandon, **Ajit K. Mahapatro**, "Electrical Conductivity in Thermoelectrically Active Hot-pressed Thallium Doped Bismuth Telluride in the Temperature Range of 300 - 550 K," Think-nano 2016, 31 March – 01 April, 2016, Center for Nanoscience and Engineering, Indian Institute of Science, Bangalore, India.
- Satish Kumar, Soni Kumari, S. K. Jangir, S. N Singh, Anshu Goyal, Garima Upadhyay, P. Mishra, T. Srinivasan, **A. K. Mahapatro**, R. Muralidharan, Optimization of ammonium sulfide (NH₄)₂S passivation process on GaSb surface, 18th Int. Workshop on Physics of Semiconductor Devices, Dec. 7-10, 2015, Indian Institute of Science, Bangalore, India.
- **A. K. Mahapatro**, P. Shaini, M. Singh, R. P. Tandon, and S. P. Singh, "Annealed Graphene Oxide Thin Film Based Bipolar Resistive Switches for Non-volatile Memory Devices," Int. Conf. on Electron Microscopy and XXXVI Annual Meeting of the Electron Microscope Society of India (EMSI), Bhabha Atomic Research Centre, Mumbai, India, July 8-10, 2015.
- S. K. Bharadwaj, K. Agarwal, R. Chauhan, P. Yadav, **A. K. Mahapatro**, S. Ghosh, and T. Basu, "Surface Plasmon Triglyceride Biosensor based on Self Assembled Graphene Oxide Nano Sheet," Int. Conf. on Electron Microscopy and XXXVI Annual Meeting of the Electron Microscope Society of India, Bhabha Atomic Research Centre, Mumbai, India, July 8-10, 2015.
- **A. K. Mahapatro**, "Interaction of Nanotechnology with the Bio-World," One Day Indo-US symposium on Recent Trends in Nanobiotechnology," Uttarakhand Council for Biotechnology, Biotech Bhavan, U. S. Nagar, Uttarakhand, Mar. 10, 2015.
- S. K. Bhardwaj, **A. K. Mahapatro**, and T. Basu, "Biezymatic Triglyceride Biosensor Based on Electrochemically Reduced Graphene Oxide," Uttarakhand Council for Biotechnology, Biotech Bhavan, Haldi, U.S. Nagar, Uttarakhand, Mar. 10, 2015.
- **A. K. Mahapatro**, P. Shaini, M. Singh, J. Thakur, R. P. Tandon, and S. P. Singh, "Graphene Oxide Based Bipolar Resistive Switches for Non-volatile Memory Devices," National Conference on Microscopy & Advances in Material Sciences-2015, Department of Physics & Electronics, Univ. of Jammu, Jammu (India), 2-4 March, 2015.

- Raj Kumar Gupta, Ram P. Tandon, and **Ajit K. Mahapatro**, "Preparation of $\text{Ca}_3\text{Co}_4\text{O}_9$ and $\text{Ca}_3\text{Co}_4\text{O}_9/\text{ZrO}_2$ Nano-composites for Thermoelectric Studies," National Conference on Microscopy & Advances in Material Sciences-2015, Department of Physics & Electronics, University of Jammu, Jammu - 180 006 (India), 2-4 March, 2015.
- Pooja Saini, Manjri Singh, Jyoti Thakur, Ram P. Tandon, Surinder P. Singh, and **Ajit K. Mahapatro**, "Bipolar Resistive Switching in in Graphene Oxide Based Thin Film Devices," National Conference on Microscopy & Advances in Material Sciences-2015, Department of Physics & Electronics, University of Jammu, Jammu, India, 2-4 March, 2015.
- Shuchi Verma, R. K. Goyal, and **Ajit K. Mahapatro**, "Green Synthesis of Metal Micro/nano-particles from Flowering Plant Extracts," National Conference on Microscopy & Advances in Material Sciences-2015, Department of Physics & Electronics, University of Jammu, Jammu - 180 006 (India), 2-4 March, 2015.
- Sheetal K. Bhardwaj, Premlata Yadav, **Ajit K. Mahapatro**, Subhasis Ghosh, and Tinku Basu, "Electrochemically Reduced Graphene Oxide Electrode for Biosensors," National Conference on Microscopy & Advances in Material Sciences-2015, Department of Physics & Electronics, University of Jammu, Jammu - 180 006 (India), 2-4 Mar., 2015.
- **A. K. Mahapatro**, "Electronic Transport through Single Organic Molecules Using Scanning Tunneling Microscopy," International Conference on Electron Microscopy & XXXV Annual meeting of Electron Microscope Society of India (EMSI), Department of Physics and Astrophysics, Univ. of Delhi, Delhi, India, July 9-11, 2014.
- **A. K. Mahapatro**, "Micro/Nano-meter Scale Device Engineering for Nanostructure Materials," Int. Conf. on Emerging Trends in Physics for Environmental Monitoring & Management, Punjabi University, Patiala-147 002 (Punjab), 17-19, Dec. 2012.
- **A. K. Mahapatro**, "Electronic Transport in Organic/bio-functionalized Nanostructure Devices," IInd National Seminar on Physics and Technology of Novel Materials" II –2012, School of Physics, Sambalpur Univ., Burla, Odisha, Mar 12-15, 2012.
- **A. K. Mahapatro**, "Device Engineering and Electronic Properties of Organic/bio-functionalized Nanostructured Systems," Int. Conf. and Workshop on Nanostructured Ceramics and Other Nanomats, Mar 13-16, 2012, Univ. of Delhi, Delhi, India.
- **A. K. Mahapatro** & D. Peroulis, "Electronic Methodology for Uncertainty Quantification in RF-MEMS Capacitive Switches," Postdoctoral Research Symposium, Sept. 10, 2009, Argonne National laboratory, Argonne, IL.
- **A. K. Mahapatro**, B. Muralidharan, J. Ying, T. Ren, S. Datta, and D. B. Janes, "**Charge Storage during Electronic Transport through Redox-Active Organic Molecules in Nanogap Molecular Junctions**," 50th Electronic Materials Conference, June 25 -27, 2008, University of California, Santa Barbara, CA, USA.
- **A. K. Mahapatro**, J. Ying, B. Muralidharan, S. Datta, T. Ren, and D. B. Janes, "Electronic Transport through Redox-Active Organic Molecules in Nanogap Molecular Junctions," **AVS 54th International Symposium and Exhibition, October 14-19, 2007, Washington State Conventional Center, Seattle, WA.**
- B. Muralidharan, O. D. Miller, **A. K. Mahapatro**, D. B. Janes, A. W. Ghosh, and S. Datta, "Coulomb Blockade Transport through nano-structures—From Quantum Dots to Molecules," **International Symposium on Advanced Nanodevices and Nanotechnology, Dec. 2-7, 2007, Waikoloa, Hawaii, USA.**
- **A. K. Mahapatro**, Jiewen Ying, Bhaskaran Muralidharan, Supriyo Datta, Tong Ren, and D. B. Janes, "Metal-Molecule-Metal Junctions with redox-active and substituted OPE molecules," **Molecular Conduction Workshop, July 18-July 20, 2007, Purdue University, West Lafayette, IN, USA.**
- K. Parimal, **A. K. Mahapatro**, E. Witlicki, K. A. McNitt, A. Fahrenbach, D. B. Janes, and A. H. Flood, "Design, Synthesis and Electronic Properties of Redox Active, Mixed-Valent Molecular Wires," **Molecular Conduction Workshop, July 18-July 20, 2007, Purdue University, West Lafayette, IN, USA.**
- **A. K. Mahapatro**, J. Ying, K. Parimal, Amar H. Flood, T. Ren, and D. B. Janes, "Electronic Properties of Redox-Active Organic Molecules in Metal-Molecule-Metal Junctions," **49th Electronic Materials Conference, June 20-22, 2007, University of Notre Dame, Indiana, USA.**
- **A. K. Mahapatro**, D. B. Janes, J. Ying, T. Ren, G. Mallick, and S. P. Karna, "Electronic properties of metal-molecule-metal junctions formed by well-ordered monolayers of organic molecules over atomically-flat gold surfaces," 12th Advanced Heterostructure Workshop, December 3-8, 2006, Kohala Coast, Big Island of Hawai'i.
- **A. K. Mahapatro**, G. Mallick, S. P. Karna, and D. B. Janes, "Atomically Flat Gold Substrates for Single Molecule Characterization," **2006 Material Research Society, Fall Meeting, Nov. 27- Dec. 1, 2006, Hynes Convention Center & Sheraton Boston Hotel, Boston, MA.**
- **A. K. Mahapatro**, J. Ying, T. Ren, and D. B. Janes, "Large Area Molecular Devices for Electronics and Sensing," **2006 Material Research Society, Fall Meeting, Nov. 27- Dec. 1, 2006, Hynes Convention Center & Sheraton Boston Hotel, Boston, MA.**

- **A. K. Mahapatro**, M. Martinez, P. Carpenter, A. Scott, A. Yulius, J. M. Woodall, and D. B. Janes, "Fabrication of Semiconductor-Molecule-Semiconductor (SMS) Devices," **AVS 53rd Annual International Symposium and Exhibition, Nov. 12-17, 2006, Moscone West Convention Center, San Francisco, CA.**
- **A. K. Mahapatro**, K. J. Jeong, G. U. Lee, and D. B. Janes, "Electrical Transport Through Nano-structured Systems Including Single Organic Molecule and Double Stranded DNAs," **Eighth International Conference on Nanostructured Materials, August 20-25, 2006, IISc., Bangalore, INDIA.**
- **A. K. Mahapatro**, K. J. Jeong, G. U. Lee, and D. B. Janes, "Conductance Sensor Based on Polyion Stabilized and Thiol Functionalized Double Stranded DNA Molecules," **2006, Electronic Materials Conference, June 28-30, 2006, Pennsylvania State University, Pennsylvania, USA.**
- **A. K. Mahapatro** and D. B. Janes, "*Gold Substrates of Sub-nm Surface Roughness with Molecular Adhesion Monolayer Technique Well-suited for Molecular Engineering*," 2005 Material Research Society, Fall Meeting, Nov. 28 - Dec. 2, 2005, Boston, MA, USA.
- **A. K. Mahapatro**, K. J. Jeong, S. Bhattacharya, G. Lee, and D. B. Janes, "DNA Conductance Sensor Platforms Using Nano-scale Break Junctions," **AVS 52nd Annual International Symposium and Exhibition, Oct. 30-Nov.4, 2005, Hynes Convention Center, Boston, MA, USA.**
- **A. K. Mahapatro**, K. J. Jeong, S. Bhattacharya, G. U. Lee, D. B. Janes, "Electrical Conduction through ds-DNA molecules with Nano-scale Break Junctions," **Molecular Conduction Workshop, July 27-29, 2005, Purdue University, West Lafayette, IN, USA.**
- G. U. Lee, W. S. Chang, K. J. Jeong, D. M. Oh, A. Fung, D. B. Janes, S. Bhattacharya, and **A. K. Mahapatro**, "Biological Sensing using Novel Magnetic Materials," **Molecular Conduction Workshop, July 27-July 29, 2005, Purdue University, West Lafayette, IN, USA.**
- **A. K. Mahapatro**, Kyung J. Jeong, S. Ghosh, Sugata Bhattacharya, G. U. Lee, and D. B. Janes, "Measurement of Single Molecule Conductance with Nanoscale Break Junctions," **47th Electronic Materials Conference, June 22 -24, 2005, University of California, Santa Barbara, CA, USA.**
- **A. K. Mahapatro**, S. Ghosh, and David Janes, "Nanometer Scale Electrode Separation (Nano-gap) Using Electromigration at Room Temperature," **The 2nd Conference on Nanoscale Devices & System Integration, April 4-6, 2005, Houston, TX, USA.**
- K. Lee, **A. K. Mahapatro**, A. Yulius, E. Harmon, D. B. Janes, J. M. Woodall, "Conductivity of InAs Nanorods Grown in GaAs Via Holes," **47th Electronic Mat. Conf., June 22 -24, 2005, Univ. of California, Santa Barbara, CA, USA.**
- N. Sarkar, **A. K. Mahapatro**, S. Ghosh, "Anomalous Behavior of Low Temperature Mobility in Copper Phthalocyanine Thin Film," **47th Electronic Materials Conference, June 22 -24, 2005, University of California, Santa Barbara, CA, USA.**
- **A. K. Mahapatro**, Ruchi Agrawal, and S. Ghosh, "Current Injection Mechanism in Metal/Molecular-Organic-Semiconductor/Metal Structures," **46th Electronic Materials Conference, June 23-25, 2004, Notre Dame University, Notre Dame, IN, USA.**

Other publications (Edited works, Book reviews, Festschrift volumes, etc.)

Papers Published in Electronic-journals at <http://arXiv.org>

- **A. K. Mahapatro** and S. Ghosh, "Charge Carrier Transport in Metal Phthalocyanine Based Disordered Thin Films," **Preprint # arXiv:cond-mat/0604220 (2006).**
- **A. K. Mahapatro**, S. Ghosh, D. B. Janes, "Pairs of Gold Electrodes with Nanometer Separation Performed over SiO₂ Substrates with a Molecular Adhesion Monolayer," **Preprint # arXiv:cond-mat/0503656 (2005).**
- **A. K. Mahapatro** and S. Ghosh, "Role of Correlation on Charge Carrier Transport in Organic Molecular Semiconductors," **Preprint # arXiv:cond-mat/0305342 (2003).**
- **A. K. Mahapatro** and S. Ghosh, Nature of Charge Carriers in Disordered Organic Molecular Semiconductors," **Preprint # arXiv:cond-mat/0305275 at (2003).**
- **A. K. Mahapatro**, and S. Ghosh, "Is correlation important in explaining the charge transport in disordered molecular solids?" **Preprint # arXiv:cond-mat/0302323 (2003).**

Manuscripts Pre-prints

- **A. K. Mahapatro**, S. S. Athavale, P. N. Borer, and Liviu Movileanu, "Controlled single-molecule fluctuations of a captured polypeptide within a nanopore."
- **A. K. Mahapatro**, David J. Niedzwiecki, R. N. Iyer, P. N. Borer, and Liviu Movileanu, "Interaction of HIV-1 Nucleocapsid protein with specific oligonucleotide Hairpins as captured in translocation through solid state nanopores."

- **A. K. Mahapatro** and D. Peroulis, "Quantification of the Post-release Gap-height Uncertainty of Capacitive RF MEMS Switches."
- **A. K. Mahapatro** and D. B. Janes, "Metal-Molecule-Metal Junctions for Large Area Molecular Devices."
- **A. K. Mahapatro**, G. Mallick, K. Joyner, Q. D. Zheng, P. N. Prasad, S. P. Karna, and D. B. Janes, "Electronic Transport properties of σ - and π -bonded Molecules over Atomically-flat Gold Surfaces."
- **A. K. Mahapatro** and D. Peroulis, "Uncertainty Quantification in geometrical and materials Properties of Capacitive RF MEMS Switches."
- **A. K. Mahapatro**, W. S. Chang, K. J. Jeong, G. U. Lee, and D. B. Janes, "Quantitative Study on Electronic Conduction Through Short (≤ 10 nm) Double Stranded DNAs."
- **A. K. Mahapatro**, B. Muralidharan, J. Ying, T. Ren, S. Datta, and D. B. Janes, "Sequential Tunneling Transport model for Metal-Molecule-Metal Junctions with Redox-active Molecules."
- **A. K. Mahapatro** and S. Ghosh, "Effect of High Energy Light Ion Irradiation on Optical Transitions in tris,8-hydroxyquinoline Alluminum(AlQ_3)."

Conference Organization/ Presentations (in the last three years)

Organization of Workshops/Seminars

As Co-Chair:

- **International Conference on Electron Microscopy & XXXV Annual Meeting of Electron Microscope Society of India (EMSI), Organized at the Department of Physics and Astrophysics at the University of Delhi 110007, during July 7-11, 2014.**

As Convener:

- "International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), University of Delhi, Delhi, India, November 7-11, 2016"
- "One Day Seminar on the Development of Nanoscience and Nanotechnology," M. Tech. Nanoscience and Nanotechnology Program, University of Delhi, Delhi, on 14th March, 2014.
- "Workshop on the Progress of Academics and Industry in the Development of Nanotechnology," M. Tech. Nanoscience and Nanotechnology Program, University of Delhi, Delhi 110007, 18-19 Mar. 2013.
- "National Seminar on the Frontiers in Condensed Matter Physics" organized by the Department of Physics and Astrophysics at the University of Delhi 110007 during 12-14 April 2013.

As Member of Organizing Committee:

- "Visitors Program 2014", Department of Physics and Astrophysics, University of Delhi, Delhi 110007 during 11-12th March 2014.
- "Recent Trends in Nanoscience and Nanotechnology" M. Tech. Nanoscience and Nanotechnology Program, University of Delhi, Delhi 110007 during 15-16th Oct 2012.

Participation as Paper/Poster Presenter

Verbal

Invited:

- **A. K. Mahapatro**, "Annealed Graphene Oxide Thin Film Based Bipolar Resistive Switches for Non-volatile Memory Devices," International Conference on Electron Microscopy and XXXVI Annual Meeting of the Electron Microscope Society of India (EMSI), Bhabha Atomic Research Centre, Mumbai, India, July 8-10, 2015.
- **A. K. Mahapatro**, "Interaction of Nanotechnology with the Bio-World," One Day Indo-US symposium on "Recent Trends in Nanobiotechnology," Uttarakhand Council for Biotechnology, Biotech Bhavan, U.S. Nagar, Uttarakhand, 10th Mar. 2015.
- **A. K. Mahapatro**, "Graphene Oxide Based Bipolar Resistive Switches for Non-volatile Memory Devices," National Conference on Microscopy & Advances in Material Sciences-2015, Department of Physics & Electronics, University of Jammu, Jammu - 180 006 (India), 2-4 March, 2015.
- **A. K. Mahapatro**, "Electronic Transport through Single Organic Molecules Using Scanning Tunneling Microscopy," International Conference on Electron Microscopy and XXXV Annual Meeting of Electron Microscope Society of India, University of Delhi, Delhi, India, July 9-11, 2014.

- **A. K. Mahapatro**, "Recent Progress towards Nanoscience and Nanotechnology" Department of Physics, Ramjas College, University of Delhi, 05 March 2014.
- **A. K. Mahapatro**, (i) "Science and Technology at Nanometer Scale," (ii) "Recent Progresses in Nanobiotechnology," Refresher Course in Physical Sciences, Academic Staff College, GJUS&T, Hisar, Hariyana, 03 May 2013.
- **A. K. Mahapatro**, "Micro/Nano-meter Scale Device Engineering for Nanostructure Materials," Int. Conf. on Emerging Trends in Physics for Environmental Monitoring & Management, Punjabi University, Patiala (Punjab), **17-19, Dec. 2012.**
- **A. K. Mahapatro**, "Introduction to Nanotechnology," Refresher Course in Physical Sciences, ASC, Jawaharlal Nehru University, New Delhi, **Oct. 01, 2012.**
- **A. K. Mahapatro**, "Recent Progresses in Nanotechnology," Refresher Course in Physics, Dept of Physics and Astrophysics, University of Delhi, Delhi, India, **Sept. 25, 2012.**
- **A. K. Mahapatro**, "Electronic Transport in Organic/bi—functionalized Nanostructure Devices," **IInd National Seminar on "Physics and Technology of Novel Materials" II – 2012, School of Physics Sambalpur University Burla, Odisha, March 12-15, 2012.**
- **A. K. Mahapatro**, "Recent Progresses in NanoBioTechnology," 11th Refresher Course in Physical Sciences, ASC, Jawaharlal Nehru University, New Delhi, **Feb. 16, 2012.**
- **A. K. Mahapatro**, "Nanotechnology: A Future Enabling Technology?" Visitors's Programme – 2011, Department of Physics and Astrophysics, University of Delhi, Delhi, India, **March 25, 2011.**

Contributed:

- **A. K. Mahapatro**, "Device Engineering and Electronic Properties of Organic/bio-functionalized Nanostructured Systems," Int. Conf. and Workshop on Nanostructured Ceramics and Other Nanomaterials, March 13-16, 2012, Univ. of Delhi, Delhi, India.

Research Projects (Major Grants/Research Collaboration)

Grant agency	Title of the project and Reference number	Duration of the project	Amount in Lakh Rs.	Status
UGC	Electronic Transport through Organic Nanostructured Thin Films	April 2013 – March 2016	9.44	Continuing
DST: Indo-Taiwan Program	Electronic Properties of Metal-oxide based Nanostructure Devices	April. 01, 2013 – March 31, 2016	38.463	Continuing
DRDO	Study of Thermoelectric Properties of Doped and Nano Composites of Ca ₃ CO ₄ O ₉ Ceramic and Hot Pressed Bismuth Telluride (Bi ₂ Te ₃) in the Temperature Range (300-500K)	Jan. 28, 2014 – Jan 27, 2016	85.4824	Continuing
LSRB-DRDO	Synthesis and Characterization of magnetic nanoparticles for tumor treatment using magnetic fluid hyperthermia	Jan 2014- Jan 2017	38.888	Continuing

Awards and Distinctions

Association With Professional Bodies

Electron Microscopy Society of India

Other Activities