



## 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<br>University of Delhi, Delhi 110007   |      |           |           |            |
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| Residence   |                        |   |      |           |           |            |
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| Web-Page  |                        |   |      |           |           |            |
| Educational Qualifications  |                        |   |      |           |           |            |
| Degree  |                        | Institution   |      |           | Year      |            |
| Ph.D.   |                        | Jawaharlal Nehru University, New Delhi  |      |           | 2003      |            |
| PG  |                        | Berhampur University, Berhampur, Orissa   |      |           | 1995      |            |
| UG  |                        | Berhampur University, Berhampur, Orissa   |      |           | 1993      |            |
| Career Profile  |                        |   |      |           |           |            |
| Assistant Professor   |                        | Department of Physics and Astrophysics<br>University of Delhi, Delhi 110007   |      |           | 2011      |            |
| Research Associate  |                        | Department of Physics<br>Syracuse University, Syracuse, NY, USA<br>Lab: Cornell Nanofabrication Facility<br>Cornell University, Ethaca, NY, USA |      |           | 2010      |            |
| Post-doctoral Research Associate  |                        | Birck Nanotechnology Center<br>School of Electrical and Computer Engineering<br>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"> <li>• Executive Committee</li> <li>• Purchasing Committee</li> <li>• Time Table Committee</li> <li>• Examination Committee</li> <li>• Staff Advisory Committee for the Physical Society</li> </ul>   |                        |   |      |           |           |            |
| Areas of Interest / Specialization  |                        |   |      |           |           |            |
| <p><b>Research Areas Pursued:</b> 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><b>Research Interest:</b> 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"> <li>• Micro/nano-meter scale device structure designing and optimization for nano/bio-technology</li> <li>• Device engineering using micro/nano-fabrication, semiconductor processing, and molecular self assembly techniques</li> <li>• Electronic transport and optical properties of organic/bio-functionalized nano-structured systems containing single/few-organic/bio-molecules and organic thin film devices</li> <li>• Thermoelectric properties of hot-pressed pellets containing nanostructured composites</li> <li>• Interaction of magnetic nanoparticles with live cells for utilization in magnetic fluid hyperthermia</li> </ul> |                        |   |      |           |           |            |

| Subjects Taught  |
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| <p><b>M. Sc. (Physics) I &amp; II Semesters: Solid State Physics (Lab.)</b><br/> <b>III &amp; IV Semesters: Solid State Physics (Lab.)</b><br/> <b>III &amp; IV Semesters: Nanomaterials (Lab.)</b><br/> <b>IV Semester: Physics at Nanoscale</b><br/> <b>II Semester: Quantum Mechanics - II</b></p> <p><b>M. Tech. in Nanoscience and nanotechnology: NSNT 203: Solid State Physics</b><br/> <b>NSNT 204: Chapter - Lithographic Techniques</b><br/> <b>NSNT 401: Properties of Nanostructured Materials</b><br/> <b>NSNT 501: Molecular Electronics</b><br/> <b>NSNT 504: Practical Projects in Nanoelectronics and biosensors</b></p> <p><b>Currently Teaching: M. Sc. (Physics) III &amp; IV Semesters: Solid State Physics (Lab.)</b><br/> <b>III Semester: Solid State Physics (Theory)</b></p>   |
| Research Guidance  |
| <p><b>Supervisor to Ph. D Students:</b><br/> <i>Ms. Nidhi Puri (Joined in Aug. 2017)</i><br/> <i>Ms. Sheetal Issar (Joined in Feb. 2015)</i><br/> <i>Mr. Satish Kumar (Joined in Oct. 2014)</i><br/> <i>Mrs. Pooja Shaini (Submitted, Joined in Jan. 2014)</i></p> <p><b>Co-Supervisor to PhD Students:</b><br/> <i>Dr. Sheetal Bhardwaj (Awarded)</i><br/> <i>Dr. Raj Kumar Gupta (Awarded)</i></p>   |
| Publications Profile   |
| <p><u>Research papers published in Refereed/Peer Reviewed Journals</u></p> <ul style="list-style-type: none"> <li>• S. Issar and A. K. Mahapatro, "Hydrothermally grown nanostructures of titanium dioxide in various morphologies," <b>MATERIALS SCIENCE IN SEMICONDUCTOR PROCESSING, Accepted (2019).</b></li> <li>• N. Puri, A. Rohilla, S. K. Chamoli, and <b>A. K. Mahapatro</b>, "Effect of Ytterbium Oxide Deposition in the Materials and Electrical Properties of Tantalum Foil," <b>MATERIALS LETTERS, 253, 67-70 (2019).</b></li> <li>• S. K. Bhardwaj, P. Yadav, R. Chauhan, <b>A. K. Mahapatro</b>, S. Ghosh, and T. Basu, "S. K. Bhardwaj, P. Yadav, R. Chauhan, <b>A. K. Mahapatro</b>, S. Ghosh, and T. Basu, "Bi-enzyme functionalized electro-chemically reduced transparent graphene oxide platform for triglyceride detection," <b>BIOMATERIALS SCIENCE, 7, 1598-1606 (2019).</b></li> <li>• N. Puri, Ram P. Tandon and <b>A. K. Mahapatro</b>, "Significant enhancement in thermoelectric power factor of bulk nanostructured calcium cobalt oxid," <b>ACS APPLIED ENERGY MATERIALS, 2, 269-277 (2019).</b></li> <li>• S. Mahendran, A. Miaskowski, <b>A. K. Mahapatro</b>, O. Hovorka, and J. Dobson, "Practical bioinstrumentation developments for AC magnetic field-mediated magnetic nanoparticle heating applications," <b>APPLIED PHYSICS A, 125, 194 (2019).</b></li> <li>• S. Kumar, <b>A. K. Mahapatro</b>, and P. Mishra "Swift heavy silver (<math>Ag^{+7}</math>) ion irradiation induced self assembled nanodots on MBE grown Gallium Antimonide (GaSb)," <b>APPLIED SURFACE SCIENCE, 462, 815-821 (2018).</b></li> <li>• N. Puri, Ram P. Tandon and <b>A. K. Mahapatro</b>, " Variable range hopping conduction in hot-pressed calcium cobalt oxide textured ceramics," <b>CERAMICS INTERNATIONAL, 44, 526-530 (2018).</b></li> <li>• P. Saini, M. Singh, J. Thakur, R. P. Tandon, R. Ma, S. P. Singh, and <b>A. K. Mahapatro</b>, "Probing the mechanism for bipolar resistive switching in annealed graphene oxide thin films," <b>ACS APPLIED MATERIALS AND INTERFACES, 10, 6521-6530 (2018).</b></li> <li>• N. Puri, Ram P. Tandon, and <b>A. K. Mahapatro</b>, "Fully dense hot-pressed calcium cobalt oxide ceramics," <b>CERAMICS INTERNATIONAL, 44, 515-520 (2018).</b></li> <li>• M. Singh, P. Saini, B. P. Singh, P. Singh, R. P. Tandon, <b>A. K. Mahapatro</b>, and S. P. Singh, "Tuneable Physicochemical Properties of Thermally Annealed Graphene Oxide Powder and Thin Films," <b>JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, 18, 1763-1771 (2018).</b></li> <li>• P. Saini, M. Singh, S. P. Singh, and <b>A. K. Mahapatro</b>, "Spectroscopic and electronic properties of polyallylamine functionalized graphene oxide films," <b>VACUUM, 154, 110-114 (2018).</b></li> </ul> |

- S. K. Bhardwaj, P. Yadav, S. Ghosh, and T. Basu, **A. K. Mahapatro**, "Biosensing Test-Bed Using Electrochemically Deposited Reduced Graphene Oxide," **ACS ADVANCED MATERIALS AND INTERFACES**, **8**, 24350–24360 (2016).
- R. K. Gupta, R. Sharma, **A. K. Mahapatro**, and R. P. Tandon, "The effect of ZrO<sub>2</sub> dispersion on the thermoelectric power factor of Ca<sub>3</sub>Co<sub>4</sub>O<sub>9</sub>," **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).
- N. Puri, R. K. Gupta, **A. K. Mahapatro**, and R. P. Tandon, "Neodymium Doped Bismuth Telluride Nanocomposites for Thermoelectrics Application" *Integrated Ferroelctrics*, **184**, 9-14 (2017).
- R. K. Gupta, N. Puri, R. Sharma, **A. K. Mahapatro**, and R. P. Tandon, "Hot Pressed Pellets of Thallium Doped Bismuth Telluride Nanocomposites for Thermoelectrics," *Integrated Ferroelctrics*, **184**, 32-37 (2017).
- B. Sharma, Atul Kumar, Satya Dev, Rakesh Dhar, R. P. Tandon, **A. K. Mahapatro**, "Anti-Bacterial Biofilm Activity of Magnesium Ferrite Thin Film," *Integrated Ferroelctrics*, **184**, 69-74 (2017).
- S. K. Bhardwaj, T. Basu, and **A. K. Mahapatro**, "Triglyceride detection using reduced graphene oxide on ITO surface," *Integrated Ferroelctrics*, **184**, 92-98 (2017).
- S. Issar, P. Poddar, and **A. K. Mahapatro**, "Growth of flower-like patterns of TiO<sub>2</sub> nanorods over FTO substrate," *Integrated Ferroelctrics*, **184**, 166-171 (2017).
- P. Saini, M. Singh, R. P. Tandon, S. P. Singh, and **A. K. Mahapatro**, "Temperature dependent electronic conduction through graphene oxide thin film based two terminal devices," *Integrated Ferroelctrics*, **184**, 210-216 (2017).
- S. Kumar, S. Kumari, S. K. Jangir, R. K. Pandey, A. Goyal, G. Upadhyay, P. Mishra, **A. K. Mahapatro**, "Comparative study of wet sulfur passivation process on GaSb (100) surface," *Integrated Ferroelctrics*, **186**, 77-83 (2018).

- S. Kumar, P. Mishra, and **A. K. Mahapatro**, "Nanofiber network formation by 50 keV Ar<sup>+</sup> ion irradiation on GaSb surface," Integrated Ferroelctrics, Accepted, 2019.
- P. Saini, M. Singh, R. P. Tandon, S. P. Singh, and **A. K. Mahapatro**, "Electrical Properties of Self Sustained Layer of Graphene Oxide and Polyvinylpyridine Composite," Integrated Ferroelctrics, Accepted, 2019.
- N. Puri, Ram P. Tandon and **A. K. Mahapatro**, Materials Characterization of Cobalt Antimonide Nanostructures as Thermoelectric Material," Integrated Ferroelctrics, Accepted, 2019.

*Research papers Submitted for publication in Refereed/Peer Reviewed Journals*

- S. Kumar, P. Mishra and **A. K. Mahapatro**, " Nanoporous structures with interconnecting nanofibers by irradiating low energy (~100 keV) beam of Ar<sup>+</sup>-ions on GaSb (100) surface," Submitted (2018).
- S. K. Bhardwa, P. Yadav, R. Chauhan, **A. K. Mahapatro**, S. Ghosh, and T. Basu, "Redox mediator embedded electrochemically reduced graphene oxide platform for smart reliable sensing of triglyceride in blood," Submitted (2018).
- S. Kumar, G. Upadhyay, R. Raman, and P. Mishra, and **A. K. Mahapatro**, "Swift heavy silver (Ag<sup>+7</sup>) ion irradiation induced self assembled nanodots on MBE grown Gallium Antimonide (GaSb)," Submitted (2018).

*Research papers to be Submitted to Refereed/Peer Reviewed Journals*

- S. K. Bhardwaj, P. Yadav, S. Ghosh, T. Basu, and **A. K. Mahapatro**, "SPR detection for interaction of tributyrin with Lipase using RGO platform," (2018).
- S. Issar and **A. K. Mahapatro**, "Resistive switching in array of titanium dioxide nanorods grown over fluorine doped tin oxide substrate with copper top electrode," (2018).
- N. Puri, Ram P. Tandon and **A. K. Mahapatro**, "Resistive switching in hot-pressed calcium cobalt oxide at low temperature," (2018).

*Research papers published in Refereed/Peer Reviewed Conferences*

- B. Sharma, R. P. Tandon, **A. K. Mahapatro**, "Anticancer activity of iron doped zinc peroxide nanoparticles by hyperthermia," International Conference on Materials Science & Technology (ICMTech-2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India. Advanced Materials Proceedings, (2016).
- P. Saini, Khobaib, P. Gautam, M. Singh, R. P. Tandon, S. P. Singh, and **A. 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. To be published in Advanced Materials Proceedings, 2(3), 209-212 (2017).
- S. K. Bhardwaj, **A. K. Mahapatro**, T. Basu, "Benzymatic triglyceride biosensor based on electrochemically reduced graphene oxide," **International Journal of ChemTech Research**, Vol.7, pp. 858-866, 2015; International Conference 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 Eigen modes caused by Dielectric Charging," XV Int. Workshop on the Phy. Semi. Dev., 2009, Dec. 16-20, New Delhi, India.
- 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," 10<sup>th</sup> 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," 10<sup>th</sup> Int. Workshop on the Phy. Semi.Dev., Dec.14-18 (1999), New Delhi, 239-242.
- **A. K. Mahapatro** and S. Ghosh, "Mechanism of charge injection in Metal/Copper-Phthalocyanine/Metal structures," 11<sup>th</sup> 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:

- S. Issar and **A. K. Mahapatro**, "Preparation and Characterization of Titanium Dioxide Nanowires with Vertically Stranded and Flowery Arrangements," 5<sup>th</sup> International Conference on Nanoscience and Nanotechnology, SRM Institute of Science and Technology, Jan 28-30, 2019, Kattankulathur, Chennai, India.
- P. Saini, M. Singh, S. P. Singh, and **A. K. Mahapatro**, "Contact electrode effect in the electrical resistivity through graphene oxide thin films," 5<sup>th</sup> International Conference on Nanoscience and Nanotechnology, SRM Institute of Science and Technology, Jan 28-30, 2019, Kattankulathur, Chennai, India.
- Agrim Jetwani, Ojas Paliwal, Manvi Sachdeva, Nidhi Puri, Sheetal Issar, Ram P. Tandon, and **Ajit K. Mahapatro**, "Preparation of Graphene Oxide with Varied Levels of Oxidation," International Conference on Nano-structured Materials and Devices (ICNSMD-2018), Dec. 17-20, 2018, University of Delhi, New Delhi, India.
- Bharti Sharma, Ram P. Tandon, and **Ajit K. Mahapatro**, "In vitro cytotoxicity of ZnFe<sub>3</sub>O<sub>4</sub> nanoparticles to buffalo epithelial fibroblast cells," International Conference on Nano-structured Materials and Devices (ICNSMD-2018), Dec. 17-20, 2018, University of Delhi, New Delhi, India.
- Nidhi Puri, N. C. Mehra, Ram P. Tandon, and **Ajit K. Mahapatro**, "Electronic properties of as-synthesized calcium cobalt oxide ceramics," International Conference on Nano-structured Materials and Devices (ICNSMD-2018), Dec. 17-20, 2018, University of Delhi, New Delhi, India.
- Sheetal Issar, N. C. Mehra, Ram P. Tandon, and **Ajit K. Mahapatro**, "Preparation and characterization of titanium based metal oxide nanowire," International Conference on Nano-structured Materials and Devices (ICNSMD-2018), Dec. 17-20, 2018, University of Delhi, New Delhi, India.
- Pooja Saini, Manjri Singh, Ram P. Tandon, Surinder P. Singh, and **Ajit K. Mahapatro**, "Diffusion of atomic content of metals at the metal/graphene oxide interface," International Conference on Nano-structured Materials and Devices (ICNSMD-2018), Dec. 17-20, 2018, University of Delhi, New Delhi, India.
- Satish Kumar, Puspashree Mishra, and **Ajit K. Mahapatro**, "Swift Heavy Silver (Ag<sup>+7</sup>) Ion Irradiation Induced Nanodots Formation on GaSb Epi-layer," International Conference on Nano-structured Materials and Devices (ICNSMD-2018), Dec. 17-20, 2018, University of Delhi, New Delhi, India.
- P. Saini, M. Singh, S. P. Singh, and **A. K. Mahapatro**, "Role of migrating metal electrode contents in the electrical resistivity of graphene oxide thin film devices," 2018 MRS Fall Meeting, Nov. 25-30, 2018, Hynes Convention Center and Sheraton Boston Hotel in Boston, Massachusetts.
- S. Kumar, P. Mishra and **A. K. Mahapatro**, "Influence of temperature on Nanofabrication using Swift Heavy Silver (Ag<sup>+7</sup>) Ion Irradiation on GaSb," 2018 MRS Fall Meeting, Nov. 25-30, 2018, Hynes Convention Center and Sheraton Boston Hotel in Boston, Massachusetts.
- **A. K. Mahapatro**, "Optimal bistable switching in graphene oxide thin film devices," Collaborative Conference on Materials Research (CCMR) 2018, June 25 – 29, 2018, Incheon/Seoul, South Korea.
- N. Puri, Ram P. Tandon and **A. K. Mahapatro**, "Electronic conduction mechanism in fully dense hot-pressed Ca<sub>3</sub>Co<sub>4</sub>O<sub>9</sub> ceramics," Collaborative Conference on Materials Research (CCMR) 2018, June 25 – 29, 2018, Incheon/Seoul, South Korea.
- Satish Kumar, Anand Kumar, Garima Upadhyay, Anshu Goyal, Puspashree Mishra, **Ajit K. Mahapatro**, "Nanostructure formation by Ar<sup>+</sup> Ion Irradiation on GaSb Surface," IWPSD-2017, December 11-15, 2017, IIT Delhi, India.
- Sheetal Issar, Pankaj Poddar, and Ajit K. Mahapatro, "TiO<sub>2</sub> nanostructures in various shape and size," IWPSD-2017, December 11-15, 2017, IIT Delhi.
- Pooja Saini, Manjri Singh, Surinder P. Singh, and **Ajit K. Mahapatro**, "Memristor behavior in gold nanocluster mixed graphene oxide nanocomposite based thin film devices," IWPSD-2017, December 11-15, 2017, IIT Delhi, India.
- Satish Kumar, Aman Arora, Anshu Goyal, P. Mishra, **A. K. Mahapatro**, "Nanofiber network using 50 keV Ar<sup>+</sup> ion irradiation on gallium antimonide surface," ICNIB-2017, October 11-13, 2017, DAVV Indore, India.
- Pooja Saini, Manjri Singh, Surinder P. Singh, and Ajit K. Mahapatro, "Enhanced electronic conduction in polyallylamine functionalized graphene oxide thin films," ICTF-2017, November 13-17, 2017, CSIR-NPL, Delhi.
- Satish Kumar, Garima Upadhyay, R. Raman, **Ajit K. Mahapatro** and Puspashree Mishra, "Formation of nanodots by swift heavy silver (Ag<sup>+7</sup>) ion irradiation on gallium antimonide (GaSb) surface," in ICTF-2017, November 14-17, 2017, CSIR-NPL, Delhi, India.

- B. Sharma, R. P. Tandon, **A. K. Mahapatro**, "Anticancer activity of iron doped zinc peroxide nanoparticles by hyperthermia," Int. Conf. on Nanoscience and Nanotechnology-2017, SRM University, Chennai, India, (2017).
- Bharti Sharma, Ram P. Tandon, **A. K. Mahapatro**, "Anticancer activity of iron doped zinc peroxide nanoparticles by hyperthermia," EMSI International Conference 2017, Confluence Banquets & Resorts, Mahabalipuram 603104, Tamilnadu, India, July 17-19, 2017.
- S. Issar, Pankaj Poddar, and **A. K. Mahapatro**, "Chemical synthesized TiO<sub>2</sub> nanostructures in various shape and size," EMSI International Conference 2017, Confluence Banquets & Resorts, Mahabalipuram 603104, Tamilnadu, India, July 17-19, 2017.
- N. Puri, Ram P. Tandon and **A. K. Mahapatro**, "Electronic transport in textured Ca<sub>3</sub>Co<sub>4</sub>O<sub>9</sub> polycrystalline ceramics," EMSI International Conference 2017, Confluence Banquets & Resorts, Mahabalipuram 603104, Tamilnadu, India, July 17-19, 2017.
- **A. K. Mahapatro**, Pooja Shaini, Manjari Singh, Navin. C. Mehra, Ram P. Tandon, and Surinder P. Singh, „Bipolar Resistive Switching in Annealed Graphene Oxide Thin Film Devices," Accepted, EMSI International Conference 2017, Confluence Banquets & Resorts, Mahabalipuram 603104, Tamilnadu, India, July 17-19, 2017.
- B. Sharma, R. P. Tandon, **A. K. Mahapatro**, "Magnetic iron nanoparticles: Heating mediators for cancer therapy," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- C. K. Gupta, N. Puri, A. Rohilla, **A. K. Mahapatro**, and S. K. Chamoli, "Materials Characteristics Of Thin 174yb Targets Prepared Using Evaporation Technique," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- R. Singh, V. Luthra, **A. K. Mahapatro**, R. P. Tandon, "Effect of sintering temperature on dielectric properties of NBT-BCT lead free piezoelectric ceramics," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- S. K. Sharma, K. Suri, **A. K. Mahapatro**, N. C. Mehra, V. K. Sachdev, R. P. Tandon, "Fabrication and characterization of graphite/PVDF conductive composite electrode for electrochemical bio-sensing," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- S. K. Sharma, P. Gautam, **A. K. Mahapatro**, N. C. Mehra, V. K. Sachdev, R. P. Tandon, "Dielectric spectroscopy and EMI shielding studies of rGO/Acrylonitrile Butadiene Styrene Nanocomposites in X-band frequency range," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- S. K. Sharma, K. Suri, **A. K. Mahapatro**, N. C. Mehra, V. K. Sachdev, R. P. Tandon, "Study of Carbon Black/Acrylonitrile Butadiene Styrene nanocomposites for EMI shielding application," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- S. K. Sharma, P. Gautam, **A. K. Mahapatro**, N. C. Mehra, V. K. Sachdev, R. P. Tandon, "Percolation studies of selectively dispersed rGO/ABS conducting polymer nanocomposites," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- P. Gautam, S. K. Sharma, **A. K. Mahapatro**, N. C. Mehra, R. P. Tandon, "Polyethylene glycol coated Fe<sub>3</sub>O<sub>4</sub> nanoparticles for hyperthermia treatment," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- N. Puri, Ram Tandon, **A. K. Mahapatro** "Optimization of Calcium Cobaltite for Utilization in Thermoelectrics," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- Pooja Saini, Bharat Solanki, S. Issar, Shivanshu Goel, Bharti Sharma, **A. K. Mahapatro**, "Synthesis and Characterization of Copper Nanoparticles," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.
- Raj Kumar Gupta, Navin Mehra, **A. K. Mahapatro**, R. P. Tandon, "Influences of SiO<sub>2</sub> nanoparticles on the microstructure and thermoelectric behavior of Ca<sub>3</sub>Co<sub>4</sub>O<sub>9</sub>/SiO<sub>2</sub> alloys," International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity (ICTAM-AMF10), Nov. 7-11, 2016, Conference Center, University of Delhi, New Delhi, 110007, India.



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- R. K. Gupta, N. Puri, R. Sharma, **A. K. Mahapatro**, R. P. Tandon, “Hot Pressed Pellets of Thallium Doped Bismuth Telluride Nanocomposites for Thermoelectric Devices,” 3<sup>rd</sup> National Conference on Photonics and Materials Science (NCPMS-2015), November 18-19, 2015, GJUST, Hissar, Haryana.
- S. K. Bhardwaj, Premlata Yadav, **A. K. Mahapatro**, Subhasis Ghosh, Tinku Basu, “Development of a Transparent Electrochemically Reduced Graphene Oxide Electrode and Its Application In Triglyceride Biosensor,” IIT Chennai, IEAT-2016.
- Pooja Saini, Manjri Singh, Surinder P. Singh, and **Ajit K. Mahapatro**, “Optical, morphological and electrical properties of gold nanocluster and copper -phthalocyanine bilayer structure,” 1st National Workshop on Scanning Probe Microscopy Techniques (NWSPMT)-2016, Aug 11-13, 2016 Pune.
- Sheetal Issar, Balu R. Thombare, Shankar S. Kekade, Rupesh S. Devan, Shankar, I. Patil, and **Ajit K. Mahapatro**, “Morphology and electronic properties of thin film containing Nd<sub>0.4</sub>Sr<sub>0.6</sub>MnO<sub>3</sub> nanoparticles, 1st National Workshop on Scanning Probe Microscopy Techniques (NWSPMT)-2016, Aug 11-13, 2016 Pune.
- R. K. Gupta, N. Puri, Ram P. Tandon, **A. 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.
- N. Puri, R. K. Gupta, A. K. Pattanaik, R. P. Tandon, and **A. K. Mahapatro**, “Solvothermal synthesis of cobalt antimonide as thermoelectric material,” International Conference on Materials Science & Technology (ICMTech -2016), 1-4 Mar. 2016, Conference Centre, University of Delhi, Delhi, India. To be published in Advanced Materials Proceedings, Accepted (2016).
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- Satish Kumar, Soni Kumari, S. K. Jangir, R. K. Pandey, Anand Kumar, Anshu Goyal, R. Raman, P. Mishra, T. Srinivasan, **A. K. Mahapatro**, “Embedded Nanofiber Induced by Low Energy Ion Implantation on GaSb Surface,” ICMTech-2016, March 01-04, 2016, University of Delhi, India.
- S. K. Bhardwaj, P. Yadav, S. Ghosh, **A. K. Mahapatro**, and T. 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.
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- **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,” 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.
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- S. K. Bhardwaj, **A. K. Mahapatro**, and T. Basu, “Biezymatic Trigliceride Biosensor Based on Electrochemically Reduced Graphene Oxide,” Uttarakhand Council for Biotechnology, Biotech Bhavan, Haldi, U.S. Nagar, Uttarakhand, 10<sup>th</sup> March, 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,

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- Pooja Saini, Manjri Singh, Jyoti Thakur, Ram P. Tandon, Surinder P. Singh, and **A. K. Mahapatro**, "Bipolar Resistive Switching 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 **A. 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.
- S. K. Bhardwaj, Premlata Yadav, **A. 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, University of Delhi, Delhi, India, July 9-11, 2014.
- **A. K. Mahapatro**, "Micro/Nano-meter Scale Device Engineering for Nanostructure Materials," International Conference 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 University Burla, Odisha, March 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 Nanomaterials, March 13-16, 2012, Univ. of Delhi, Delhi, India.
- **A. K. Mahapatro** and 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," 50<sup>th</sup> 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 54<sup>th</sup> 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," 49<sup>th</sup> 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," 12<sup>th</sup> 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 53<sup>rd</sup> 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 52<sup>nd</sup> 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-July 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," 47<sup>th</sup> 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 Second 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," 47<sup>th</sup> Electronic Materials 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," 47<sup>th</sup> 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," 46<sup>th</sup> 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 SiO<sub>2</sub> 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).**

## Conference Organization/ Presentations

### Organization of Workshops/Seminars

#### National Level Online Teaching Experience:

- Physics is presented online to the +2 Science Student through the “UDAAN” program of Central Board of Secondary Education (CBSE) Board, Delhi, India.
- Physics: Characterization Techniques for Materials – II, 27 audio/video presentations, Ministry of Human Resource and Development (MHRD) / University Grants Commissions (UGC), India, Program through e-PG-Pathshala.

#### 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 Nano-Structured Materials and Devices,” University of Delhi, Delhi, India, Dec. 17-20, 2018.
- “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 14<sup>th</sup> 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 Co-ordinator:

- “Deputy Coordinator: “DU Pre-Entrance Summer School 2018,” Department of Physics and Astrophysics, University of Delhi, Delhi, June 1-16, 2018.
- “Deputy Coordinator: “DU Pre-Entrance Summer School 2017,” Department of Physics and Astrophysics, University of Delhi, Delhi, June 09-22, 2017.
- Coordinator: “Event for the Science Day 2017,” Poster Presentation, Department of Physics and Astrophysics, University of Delhi, Delhi, India, on February 28, 2017.

##### 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 15-16<sup>th</sup> Oct 2012.

##### Participation as Paper/Poster Presenter

###### Verbal

###### Invited:

- **A. K. Mahapatro**, “Utilization of graphene oxide thin films in nanoelectronics and biosensors,” Colloquium, 22 Apr. 2019, Department of Physics, University of Jammu, Jammu, India.
- **A. K. Mahapatro**, “Optimal bistable switching in graphene oxide thin film devices,” Collaborative Conference on Materials Research (CCMR) 2018, June 25 – 29, 2018, Incheon/Seoul, South Korea.
- **A. K. Mahapatro**, (i) Miller Indices, Imperfections in Crystals, (ii) Diffraction of X-Ray & study of crystal planes, theoretical & experimental approach, 15-16 Feb. 2018, Science Academies Lecture Workshop “Solid State Physics” Subject: Applied Physics, Bharati Vidyapeeth’s College of Engineering, New Delhi, India.
- **A. K. Mahapatro**, “Graphene Oxide as Emerging Nanostructure Materials for Nanoelectronics and Biosensors,” Feb. 7-8, 2018, Vaishnudevi University, Jammu, India.
- **A. K. Mahapatro**, “Physics at Nanometer Scale,” Central University of Jammu, Jammu, 16-17 Nov. 2017.
- **A. K. Mahapatro**, “Progress in Science and Technology at Nanometer Scale,” National Workshop on Nanotechnology: emerging frontiers and applications, NEFA-2017” Organised by Shyam Lal College, 30-31 of January 2017, Department of Chemistry, University of Delhi, Delhi.
- **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, 10<sup>th</sup> 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, **Fab. 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:**

- **Ajit K. Mahapatro**, Pooja Shaini, Manjari Singh, Navin. C. Mehra, Ram P. Tandon, and Surinder P. Singh, „Bipolar Resistive Switching in Annealed Graphene Oxide Thin Film Devices," Accepted, EMSI International Conference 2017, Confluence Banquets & Resorts, Mahabalipuram 603104, Tamilnadu, India, July 17-19, 2017.
- **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.
- **A. K. Mahapatro** and D. Peroulis, "Electronic Methodology for Uncertainty Quantification in RF-MEMS Capacitive Switch," Postdoctoral Research Symposium, Argonne national laboratory, Argonne, IL, Sept. 10, 2009.
- **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 54<sup>th</sup> International Symposium and Exhibition, October 14-19, 2007, Washington State Conventional Center, Seattle, WA.
- **A. K. Mahapatro**, J. Ying, K. Parimal, A. 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**, M. Martinez, P. Carpenter, A. Scott, A. Yulius, J. Woodall, and D. B. Janes, "Fabrication of Semiconductor-Molecule-Semiconductor (SMS) Devices," AVS 53<sup>rd</sup> Annual International Symposium and Exhibition, Oct. 30-Nov.4, 2006, Hynes Convention Center, Boston, MA, USA.
- **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 David. 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**, K. J. Jeong, G. U. Lee, 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, D. B. Janes, "DNA Conductance Sensor Platforms Using Nano-scale Break Junctions," AVS 52<sup>nd</sup> Annual International Symp. and Exhibition, Oct. 30-Nov.4, 2005, Hynes Convention Center, Boston, MA, USA.
- **A. K. Mahapatro**, K. J. Jeong, S. Ghosh, S. Bhattacharya, G. U. Lee, D. B. Janes, "Measurement of Single Molecule Conductance with Nanoscale Break Junctions," 47<sup>th</sup> Electronic Materials Conference, June 22 -24, 2005, University of California, Santa Barbara, CA, USA.
- N. Sarkar, **A. K. Mahapatro**, S. Ghosh, "Anomalous Behavior of Low Temperature Mobility in Copper Phthalocyanine Thin Film," 47<sup>th</sup> Electronic Materials Conference, June 22 -24, 2005, University of California, Santa Barbara, CA, USA.
- **A. K. Mahapatro**, R. Agrawal, and S. Ghosh, "Current Injection Mechanism in Metal/Molecular-Organic-Semiconductor/Metal Structures," 46<sup>th</sup> Electronic Materials Conference, June 23-25, 2004, Notre Dame University, Notre Dame, IN, USA.

#### 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               | Completed Successfully |
| DST: Indo-Taiwan Program | Electronic Properties of Metal-oxide based Nanostructure Devices   | April. 01, 2013 – March 31, 2016 | 38.463             | Completed Successfully |
| DRDO                     | Study of Thermoelectric Properties of Doped and Nano Composites of Ca <sub>3</sub> CO <sub>4</sub> O <sub>9</sub> Ceramic and Hot Pressed Bismuth Telluride (Bi <sub>2</sub> Te <sub>3</sub> ) in the Temperature Range (300-500K) | Jan. 28, 2014 – Jan27, 2016      | 85.4824            | Completed Successfully |
| LSRB-DRDO                | Synthesis and Characterization of magnetic nanoparticles for tumor treatment using magnetic fluid hyperthermia   | Jan 2014- Jan 2017               | 38.888             | Completed Successfully |
| SSPL-DRDO                | Investigation of Thermoelectric (TE) Properties of Calcium Cobalt Oxide (Ca <sub>3</sub> CO <sub>4</sub> O <sub>9</sub> ) and Graphene Derivatives (as nano-inclusions) for TE Generator Applications                              | 2017-2019                        | 9.83               | Completed Successfully |

#### Awards and Distinctions

#### Association With Professional Bodies

**Member:** Electron Microscopy Society of India (EMSI), Society for Technologically Advanced Materials of India (STAMI)

#### Guest Editor in Scientific Research Journals:

- Integrated Ferroelectrics: Vol. 182-184, 2018. Publisher - Taylor & Francis Group, Philadelphia, PA 19106, USA. Publications of refereed manuscripts for the presented works in the "International Conference on Nano Structured Materials and Devices (ICNSMD-2018), in New Delhi, India, 2018."
- Ferroelectrics: Vol. 516-519, 2017. Publisher - Taylor & Francis Group, Philadelphia, PA 19106, USA, Publications of the proceedings for the "Tenth Asian Meetings on Ferroelectricity (AMF10), in New Delhi, India, November 7-11, 2016."
- Integrated Ferroelectrics: Vol. 183-184, 2017. Publisher - Taylor & Francis Group, Philadelphia, PA 19106, USA. Publications of the proceedings for the "International Conference on Technically Advanced Materials (ICTAM-2016), in New Delhi, India, November 7-11, 2016."

#### Other Activities

Signature of Faculty Member