Curriculum Vitae

Name : Bhupendra Nath Dev

bhupen.dev@tcgcrest.org, bhupen.dev@gmail.com

Professional Appointments

- **Professor**
  Centre for Quantum Engineering, Research and Education (CQuERE), TCG CREST, Kolkata, April 2021– Present
- **Visiting Fellow**
  S. N. Bose National Centre for Basic Sciences, Kolkata, January – March 2021
  (Was offered the Raja Ramanna Fellowship of the Department of Atomic Energy. However, I accepted the TCG CREST position.)
- **Visiting Professor at the Department of Physics & School of Nano Science and Technology**
  Indian Institute of Technology Kharagpur, 2017–2020
- **Senior Professor at the Department of Materials Science**
  Indian Association for the Cultivation of Science, Kolkata, 2006–2017
- **Professor (2004-2006), Associate Professor (1998-2004), Assistant Professor (1992-1998), Senior Lecturer (1988-1992)**
  Institute of Physics, Bhubaneswar, 1988-2006
- **Guest Scientist at Hamburg Synchrotron Radiation Laboratory (HASYLAB)**
  HASYLAB at DESY, Hamburg, 1985–1988
- **Teaching Assistant and Research Assistant at the Department of Physics**
  State University of New York at Albany, Albany, New York, 1980-1985
- **Senior Scientific Assistant**
  Tata Institute of Fundamental Research (TIFR), Mumbai, 1978-1980

Education

- **1985 Ph.D. in Physics**
  The Department of Physics
  State University of New York at Albany, Albany, New York
  Presidential Distinguished Doctoral Dissertation Award
  Thesis title: “Structural studies of chemisorption on silicon surfaces”
  Thesis supervisors: Professor Walter M. Gibson & Professor Tara Prasad Das

- **1978 Post-M.Sc. Diploma in Solid State Physics,**
  Associate of Saha Institute of Nuclear Physics
  Saha Institute of Nuclear Physics, Kolkata
- **1977 M.Sc. in Physics**
  The Department of Physics
  Rajshahi University, Rajshahi

- **1975 B. Sc. in Physics (Honours)**
  The Department of Physics
  Rajshahi University, Rajshahi

Research Interests/Experience:

- Ion-solid interactions, ion scattering and ion implantation
- Developed ion scattering (Rutherford backscattering & channeling), ion implantation, ion microbeam facilities for research in condensed matter physics, surface science and materials science using a 3 MV pelletron accelerator at Institute of Physics, Bhubaneswar
- X-ray physics. Developed the X-ray reflectivity & X-ray standing wave experimental facilities – both the facilities were the first in India.
- Surface physics and high quality materials growth. Designed a molecular beam epitaxy (MBE) system. Using this MBE system combined with a scanning tunnelling microscope (STM), we provided the first results from India on self-organized epitaxial nanostructures and atomic resolution microscopy of single crystal surfaces, where individual surface atoms on silicon surfaces were observed.
- Quantum structures and devices. An equipment combining MBE-STM-PEEM (photoemission electron microscopy) was set up for this research. This was the first PEEM facility in India.
- Magnetism and superconductivity. We discovered a nonmagnetic state of cobalt and superconductivity in cobalt.
- Theories of various kinds as required for understanding new experimental results. We developed the theory of X-ray interactions with multilayer thin films and the electronic structures for nanoscale structures in the dimensional crossover regimes.
- Most current interest: Setting up a superconducting quantum computing facility. Superconducting quantum circuits. Research on materials for superior qubits and fabrication of superconducting qubits.

Awards and Honours

1985 Presidential Distinguished Doctoral Dissertation Award,

State University of New York at Albany. N.Y., U.S.A.

2003 MRSI Medal of Materials Research Society of India

2005 Marie Curie International Incoming Fellow of European Union

2005 Elected Fellow of the Indian Academy of Sciences

2007 Elected Fellow of the West Bengal Academy of Science and Technology

2009 DAE-Raja Ramanna Prize in Physics of Jawaharlal Nehru Centre for Advanced

Scientific Research

2010 International Alumni Award for Exceptional Achievement

State University of New York at Albany. New York, U.S.A.

2011 Elected Fellow of the National Academy of Sciences, India

2012 S. P. Sengupta Memorial Lecture of Materials Research Society of India, Kolkata

Chapter.

2015 MRSI Distinguished Lectureship Award, Materials Research Society of India

2015 Anil Kumar Memorial Lecture, Indian Institute of Science, Bangalore, India

2021 Raja Ramanna Fellowship of the Department of Atomic Energy, India

- Member of the Program Advisory Committee on Condensed Matter Physics and Materials Science, Department of Science and Technology (DST), Government of India. (1997 - 2000)
- Member of the Accelerator Users' Committee of Nuclear Science Centre, New Delhi (An Inter University Centre of UGC), (2002 - 2004).
- Member of the National Committee for Utilization of Indus Rings (NCUIR), (2004 - 2008).
- Member of the Expert Committee on Nano Science and Technology Initiative (NSTI) of Department of Science and Technology (DST), Govt. of India (2004- 2007).
- Member of the Expert Committee on Review of Accelerators, Department of Science and Technology, Government of India (2009 - 2016)
- Member of the International Scientific Committee of the International Conference on Atomic Collisions in Solids (ICACS) (Elected for the period: 2010 - 2022)
- Member of University Grants Commission SAP Advisory Committee, Tezpur University (2012- 2015)
- Member of the Board of Professional Studies in Nanotechnology, North-Eastern Hill University, Shillong (2013 – 2016)
- Member of the Scientific Advisory Committee, UGC-DAE Consortium for Scientific Research, Indore (2015 – 2018)
- Member of the Programme Advisory Committee on Physics and Astrophysics, Department of Science and Technology, Govt. of India (2016 – 2019)
- Chairman, Subject Group – Thin Films, Surfaces and Interfaces, Materials Research Society of India (2016 – present)
- Member of the Programme Advisory Committee (Condensed Matter Physics and Materials Science I), Science and Engineering Research Board, Department of Science and Technology, Govt. of India (2018 - 2020).
- Member of the Advisory cum Review Committee of UGC CAS VI Programme at the Department of Physics, IISc Bangalore (2018 – 2023).

Grants:

- Department of Atomic Energy internal grant for various projects: (About $1,300,000)

  1989-2005 (Institute of Physics, where I worked during this period, is a DAE institute).

- Institute grant from the Indian Association for the Cultivation of Science: "Setting up an advanced laboratory for surface and nanoscale science" (About $600,000) 2008

- Department of Atomic Energy grant: "Quantum structures and devices"

  (About $1,600,000) 2009-2017

Smaller projects for international collaborations (as principal investigator):

- Indo-German bilateral collaboration with Hamburg Synchrotron Radiation Laboratory (HASYLAB) at DESY, Hamburg, Germany (Physics-25). (1990-2002).
- Indo-US collaboration with State University of New York at Albany, New York, U.S.A. Grantee: Office of Naval Research, U.S.A. Grant No. N00014-95-1-0130 (1995-2006)
- Indo-Japan (DST-JST) collaborative research programme with Osaka Electro-Communication University (2009- 2012)

Conferences Attended/ Talks Delivered

(Only Invited talks including Plenary and Keynote lectures are listed here)

Invited Talks in International Conferences, Workshops and Schools:

[1] X-ray standing waves in noncentrosymmetric crystals and the phase problem in crystallography, International Conference on Anomalous Scattering , August 17 - 21,1992, Malente/Hamburg, Germany.

[2] X-ray standing waves as a tool to study periodic structures, Third InternationalSchool and Symposium on Synchrotron Radiation in Natural Science, May 31 -June 8, 1996, Jaszowiec, Poland.

[3] Structural and phase transition studies of layered materials by X-ray standing waves, 17th International Conference on X-ray and Inner-Shell Processes, September 9 -13, 1996, Hamburg, Germany.

[4] Coherent beam and the resonant enhancement of x-rays in thin films, International Workshop on X-ray Free Electron Laser Applications, September 16-17, 1996, Hamburg, Germany.

[5] X-ray standing wave studies on crystalline materials using synchrotron radiation, International School on Powder Diffraction, October 7-10, 1998, Calcutta, India.

[6] Surface modification in ion-solid interactions, The 5th IUMRS International Conference in Asia, October 13-16, 1998, Bangalore, India,.

[7] High resolution X-ray diffraction and X-ray standing waves, India-Italy Workshop on Utilization of ELETTRA Synchrotron, November 10-13, 1998, Calcutta, India.

[8] Materials modifications in heavy ion interactions with single crystals and their ion beam characterization, International Conference on Swift Heavy Ions in Materials Engineering and Characterization, October 19-22, 1998, New Delhi, India.

[9] High resolution X-ray diffraction and X-ray standing waves in condensed matter physics, International Workshop on Recent Advances in Scattering Studies in Condensed Matter Physics, Nov. 28-Dec. 4, 1999, Coorg, India.

[10] Characterization of microstructures formed on MeV ion irradiated Ag films on Si(111) surfaces, 7th International Conference on Nuclear Microprobe Technology and Applications, 10-15 September, 2000, Bordeaux, France.

[11] Interface modification and characterization by ion beams and synchrotron radiation, The Third International Conference on Synchrotron Radiation in Materials Science, January 21-24, 2002, Singapore.

[12] Layered synthetic microstructures: Importance of a combined X-ray standing wave and X-ray reflectrometric analysis, International Conference on Physics at Surfaces and Interfaces, March 4-8, 2002, Puri, India.

[13] Ion beam analysis of surfaces, interfaces and epilayers, 20th International Conference on Atomic Collisions in Solids, January 19-24, 2003, Puri, India.

[14] Synchrotron X-radiation in studies of layered and self-assembled structures, Indo-US Workshop on Radiation Physics with Synchrotron and Other New Sources, May 14-16, 2003, Argonne National Lab., USA.

[15] Novel growth of Ag islands on Si(111) by molecular beam epitaxy: Plateaus with atomic-scale preferred heights, Indo-US Workshop on Nanoscale Materials: From Science to Technology, April 5-8, 2004, Puri, India.

[16] Nanoscale self-affine surface smoothing by ion bombardment and the morphology of nanostructures grown on ion-bombarded surfaces, 21st International Conference on Atomic Collisions in Solids (ICACS21), July 4-9, 2004, Genoa, Italy.

[17] Epitaxial self-assembled nanostructures on silicon, International Conference on Nanomaterials: Synthesis, Characterization and Application, November 4-6, 2004, Kolkata, India.

[18] Epitaxial quantum dot structures on silicon and single-electron tunneling effects, Indo-US Workshop on Collaborations and Networking, December 19-21, 2004, NCL Pune, India.

[19] Nonmagnetic to magnetic nanostructures via ion irradiation, 31st International Conference on Micro- and Nano-Engineering, Vienna, Austria, 19-22 September, 2005.

[20] Nanoscience: Experiences of a Marie Curie Researcher in India, US and Europe, (Plenary Talk) in "European Marie Curie Conference 2005",Tuscany (Pisa/Livorno), Italy, 28-30 September, 2005.

[21] Marie Curie Incoming International Fellowship: Experiences and views of a Fellow, (Invited Panelist) in "The international dimension of the 'Europe of knowledge': A common interest of Europe and to the world", Brussels, Belgium, 5-7 October, 2005.

[22] Detecting atomic migration with sub-nanometer precision and understanding magnetism in a multilayer, 10th International Conference on Advanced Materials (IUMRS-ICAM 2007), Bangalore, India, October 8 – 13, 2007

[23] Transforming a nonmagnetic system into a ferromagnetic system and vice versa by ion irradiation, 3rd Indo-Japan Conference on Ferroics and Multiferroics, Kolkata, India, February 4–6, 2008.

[24] Magnetic transformations due to ion beam induced defects and atomic migration, Plenary talk at the 23rd International Conference on Atomic Collisions in Solids (ICACS23), Hans Merensky Estate, Phalaborwa, South Africa, August 17-22, 2008.

[25] Ion-beam induced surface topography, Tutorial talk at the 23rd International Conference on Atomic Collisions in Solids (ICACS23), Hans Merensky Estate, Phalaborwa, South Africa, August 17-22, 2008.

[26] Cross-over behaviour in electrical response in swift heavy ion irradiated copper-oxide/copper thin film systems, 16th International Conference on Ion Beam Modification of Materials, Dresden, Germany, August 31 – September 05, 2008.

[27] Modification and patterning of nanostructures by ion beam,

In AsiaNANO 2008 (The 2008 Asian Conference on Nanoscoence and Nanotechnology), Biopolis, Singapore, November 3-7, 2008

[29] Magnetic exchange bias and its ion beam induced enhancement in a Nanoscale Si/Co/Si system. Plenary Talk in the 19th International Conference on Ion-Surface Interactions, Zvenigorod, Russia, August 21-25, 2009

[30] Magnetic exchange bias modification by ion irradiation, 6th International Conference on Magnetism, Superconductivity and Phase Transitions in Novel and Complex Materials, Kolkata, India, November 11-14, 2009.

[31] Application of X-ray standing waves and photoemission electron microscopy in condensed matter systems, Indo-Italian Workshop on Applications of Synchrotron Radiation to Condensed Matter Problems: Basic and Applied Research, Bangalore, India, 23-25 November, 2009.

[32] Ion irradiation induced evolution of magnetic behaviour in nanoscale layered systems, International Conference on Advanced Nanomaterials and Nanotechnology, Guwahati, India, December 9-11, 2009.

[33] Diffusion in nanoscale doped semiconductors, Fifteenth International Workshop on Physics of Semiconductor Devices, New Delhi, India, December 15-19, 2009.

[34] Lateral straggling and its influence on lateral diffusion in implantation with a focused ion beam, 24th International Conference on Atomic Collisions in Solids, Krakow, Poland, July 18-23, 2010.

[35] Lateral diffusion in nanostructures fabricated by focused ion beams, 21st International Conference on the Application of Accelerators in Research and Industry, Fort Worth, USA, August 8-13, 2010.

[35] Epitaxial nanostructures on surfaces: Electronic and magnetic behaviour, International Conference on Fundamental and Applications of Nanoscience & Technology, Kolkata, India, December 9-11, 2010.

[36] Nanoscale doping of semiconductors and the role of lateral dopant diffusion, International Symposium on Advances in Nanomaterials, Kolkata, India, December 6-7, 2010.

[37] Quantum size effects in electronic and magnetic behaviour in epitaxial nanostructures, 8th International Symposium on Atomic Level Characterizations for New Materials and Devices, Seoul, Republic of Korea, May 22-27, 2011.

[38] Electronic density of states at Fermi level in the extreme two dimensional limit, International Symposium on Clusters, Cluster Assemblies and Nano-scale Materials, Harish-Chandra Research Institute, Allahabad, Nov. 28- Dec. 01, 2011

[39] Physical phenomena in atomic scale thin films, International Conference on Theoretical and Applied Physics (ICTAP), IIT Kharagpur, 1-3 December, 2011

[40] Magnetic domains in thin Co films on Si with a buffer layer: A spin polarized low energy electron microscopy investigation, International Workshop on “Novel Development of Magnetic Microscopy and Smart Spintronics Materials”, Osaka, Japan, 17-18 January, 2012

[41] Electronic structure and transport in ultrathin films near the two-dimensional limit, International Conference on Thin Films and Applications, SASTRA University, Thanjavur, 15-17 March, 2012

[42] X-ray standing wave analysis of ion irradiated multilayers: correlation between nanostructure and properties, 12th International Conference on Surface X-ray and Neutron Scattering, Kolkata, India, 25-28 July, 2012

[43] Electronic structure and transport in ultrathin films near the two dimensional limit, Kolkata-Moscow Symposium, Kolkata (22-23 January, 2013)

[44] Spontaneous formation of quantum wires via shape transition in epitaxial and endotaxial growth, 6th India Singapore Joint Physics Symposium on Physics of Advanced Materials 2013, 25-27 February, 2013, IIT Kharagpur

[45] Photoemission electron microscopy and other low energy electron microscopies for surface and near- surface investigations. International Conference on Electron Microscopy, EMSI 2013, Kolkata, India 03 – 05 July, 2013

[46] Ion irradiation and implantation effects in multilayer and multistripe systems. 21st International Conference on Ion-Surface Interactions (ISI-2013), Yaroslavl, Russia. 22 – 26 August, 2013

[47] Evolution of electronic structure and transport properties of ultrathin films near the 2-D limit. ACCMS-VO8, Tohoku University, Sendai and Matsushima, Japan, 7-9 November, 2013

[48] Electronic structure and transport in atomic layer thin films in the 2D to 3D crossover regime, 9th International Symposium on Atomic Level Characterization for New Materials and Devices '13 (ALC'13), The Big Island, Hawaii, USA, 02-06 December, 2013

[49] Self-organized epitaxial nanostructures on silicon surfaces, International Conference in Asia (IUMRS-ICA2013), Bangalore, 16-20 December, 2013

[50] Surface science: An introduction (Tutorial), The 3rd International Conference on Physics at Surfaces and Interfaces (PSI 2014), Puri, India, 24-28 February, 2014

[51] Towards tunable properties via structures in the lower dimensional crossover regimes. The 3rd International Conference on Physics at Surfaces and Interfaces (PSI 2014), Puri, India, 24-28 February, 2014

[52] A spin-polarized low energy electron microscopic investigation of magnetic domains in thin Co films on Si with a buffer layer, International Conference on Spin Physics and Nanomagnetism, Max-Planck Institute of Microstructure Physics, Halle, Germany, 10-13 July, 2014

[53] Engineering quantum structures at surfaces, International Conference on Emerging Materials: Characterization and Application, Kolkata, India, 4 – 6 December, 2014 (Plenary lecture)

[54] Electronic structure and transport in low dimensional structures in the dimensional crossover regimes, 8th India-Singapore Symposium in Condensed Matter Physics, IIT Kanpur, 25-27 February, 2015

[55] Quantum phenomena in nanostructures, International Conference on Advances in Physics, Rajshahi, Bangladesh, 18-19 April, 2015 (Plenary lecture)

[56] Surfactant role of Ag in an effort to grow germanene on a Si(111)/Ge(√3x√3)-Ag substrate, International Conference on Applied Surface Science, Shanghai, China, 27-30 July, 2015

[57] Phenomena in self-organized epitaxial nanostructure growth and structures in the dimensional crossover regimes, EMN (Energy Materials Nanotechnology) Meeting, Hong Kong, 09-12 December, 2015

[58] Growth of epitaxial nanowires using substrate symmetry as well as by symmetry breaking, EMN Meeting on Nanowires (Energy, Materials, Nanotechnology), Amsterdam, Netherlands, 16 – 19 May, 2016

[59] Self-organized epitaxial quantum dots on Si, single electron tunneling and quantum capacitance, International Frontier Forum on Quantum Information 2016, Chengdu, China, 17 – 19 June, 2016

[60] Ion fluence dependent oscillatory amorphization and recrystallization, 27th International Conference on Atomic Collisions in Solids, Lanzhou, China, 24 – 29 July, 2016

[61] Epitaxial, endotaxial and polycrystalline transition metal silicide nanostructures on silicon,Third International Conference on Emerging Electronics (ICEE 2016), IIT Bombay, India, 27 – 30 December, 2016

[62] Self-organized epitaxial metal silicide nanostructures on silicon surfaces, The 3rd International Conference on Surface and Interface of Materials (SIM2017), Bangkok, Thailand, 3 – 5 January, 2017

[63] Nanoscale transition metal silicides in nanoelectronics, International Conference on Advances in Functional Materials (ICAFM2017), Chennai, India, 6-8 January, 2017

[64] Emerging materials and novel phenomena in thin films, The 2nd International Conference on Emerging Materials: Charatization and Application (EMCA 2017), NIT Durgapur, India, 15-17 March, 2017

[65] Materials and issues in miniaturization in silicon technology towards quantum computers, 1st International Conference on Electronics, Materials Engineering and Nanotechnology (IEMENTech 2017), Kolkata, India, 28 -29 April, 2017

[66] Superdense nonmagnetic cobalt, The 9th International Conference on Materials for Advanced Technologies (ICMAT 2017), Singapore, 18 – 23 June, 2017

[67] Electronic structure of atomic- and nanoscale structures in the dimensional crossover regimes, BIT's 1st Annual Conference of Quantum World 2017 (CQW 2017), Changsha, China, 16 – 18 October, 2017

[68] Superconductivity in cobalt thin films, 17th International Conference on Thin Films 2017 (ICTF 2017), Delhi, India, 14 -17 November 2017

[69] Endotaxial silicide nanostructures on silicon and growth induced surface reconstruction, Indo-US Discussion Meeting on Surfaces and Interfaces, Kolkata, India, 02 – 04 January, 2018

[70] Superconducting cobalt in nanoscale cobalt thin films (Keynote lecture), 24th World Congress on Nanomaterials and Nanotechnology, Bangkok, Thailand, 12-13 July, 2018

[71] Scanning tunneling microscopy and photoemission electron microscopy,

International Conference on Microscopy and XXXIX Annual Meeting of Electron Microscope Society of India, Bhubaneswar, 18-20 July 2018 (Pre-conference Workshop)

[72] Vital role of transmission electron microscopy in exploring thin films and low dimensional structures, International Conference on Microscopy and XXXIX Annual Meeting of Electron Microscope Society of India, Bhubaneswar, India, 18-20 July 2018

[73] Superconductivity of cobalt in nanoscale cobalt thin films, The 5th Conference on New Advances in Condensed Matter Physics, Kunming, China, 21- 23 August, 2018

[74] Handshake between electronic structure theory and experiment in surface science and nanoscale science (Plenary Lecture), International Workshop on Evolution of Electronic Structure theory & Experimental Realization (FESTER-2018), Chennai, India, 11 -15 September, 2018

[75] Loss of magnetism and emergence of superconductivity in cobalt in a self-organized superconductor-ferromagnet hybrid structure, 20th International Union of Materials Research Societies - International Conference in Asia (IUMRS-ICA 2019), Perth, Australia, 22-26 September 2019.

[76] Early stage of growth of epitaxial $FeSi_2$ nanowires on Si(110) surface, The 20th International Workshop on the Physics of Semiconductor Devices (IWPSD 2019), Kolkata, India, 17 – 20 December, 2019.

[77] Epitaxial thin films and their impact on fundamental discoveries and advanced technologies, IEMENTech 2020, Kolkata, 02 - 04 October, 2020 (Keynote Lecture) (online)

[78] Inhomogeneous superconductivity in thin films of cobalt (Plenary talk), 2nd International Conference on Materials Science and Engineering, Bangkok, 15-16 November 2021.

[79] Quantum Technology: A glimpse into the development, International Conference on Accelerated Particles in Physics, Hyderabad, 02-04 January 2022.

[80] On the formation of X-ray waveguide structures in thin films via ion irradiation, 29th International Conference on Atomic Collisions in Solids & 11th International Symposium on Swift Heavy Ions in Matter (ICACS29-SHIM11), Helsinki, 19-22 June 2022.

[81] Superconductors in quantum computers and the various novel aspects of a new elemental superconductor, Pacific Rim International Conference on Superconducting Materials: Fundamentals and Applications (PRISM2022), Sendai, 22- 23 September 2022.

[82] Superconductor-ferromagnet hybrids (SFH) and the growth of epitaxial/endotaxial SFH nanostructures on silicon, 14th International Symposium on Atomic Level Characterizations for New Materials and Devices '22, Okinawa, 16-21 October 2022

[83] Why do we need a very low temperature for a superconducting quantum computer, International Workshop on Integration Challenges in Quantum Communication and Quantum Computing, CDAC Pune, 21-22 March 2024

[84] The rise of quantum computing: Challenges and opportunities, International Conference on 60 Years of DFT: Advancements in Theory and Computations, IIT Mandi, 21-26 July 2024

[85] Two superconducting thin film systems with potential integration of different quantum functionalities (Keynote Lecture), MRS Thailand 2025, The 5th Materials Research Society of Thailand International Conference, Bangkok, 14-16 May 2025

Invited talks in national conferences/symposia/workshops:

[1] Application of X-ray standing waves to the structural determination of the adsorbate covered crystal surfaces, Solid State Physics Symposium of DAE (India), Dec. 27-30, 1985, Nagpur, India.

[2] Structure-property relation in surfaces and interfaces, XXI National Seminar on Crystallography, Dec. 27-29, 1989, Bombay, India .

[3] Structural investigations of epitaxial interfaces, DAE Solid State Physics Symposium, Dec. 21-24, 1991, Varanasi, India.

[4] Surface and interface studies with X-ray standing waves, National Conference on Science and Technology of Surfaces and Interfaces, Dec. 16-18, 1996, Kharagpur, India.

[5] Strain relaxation, self-organization and defects in epitaxial growth, DAE Solid State Physics Symposium, December 27 -31, 1997, Cochin, India.

[6] Institute of Physics 3 MV 9SDH-2 Pelletron: Present status, Conference on Physics and Technology of Accelerators, February 10-13, 1998, Calcutta, India.

[7] Multilayers characterization by X-ray standing waves, Workshop on Interface Engineering by Energetic Heavy Ions, April 3-4, 2000, IIT, Kanpur.

[8] Multidisciplinary research at the 3 MV ion accelerator centre at IOP, DAE Solid State Physics Symposium, December 27 - 31, 2000, Bilashpur.

[9] The ion microbeam facility in Bhubaneswar, Conference on Accelerator based research in basic and applied sciences, February 25-27, 2001, New Delhi.

[10] Nanostructured multilayers - microstructures and ion beam induced effects, Symposium on New Developments in Materials: Nanomaterials and Manganites, March 2-3, 2001, New Delhi.

[11] Ion beam characterization of thin films, Indian Vacuum Society Symposium, September 5-7, 2001, Bangalore.

[12] Surface and interface phenomena and self-assembled nanostructures.

(2003 MRSI Medal Lecture) 14th Annual General Meeting of Materials Research Society of India, 11-13 February, 2003, BARC, Mumbai.

[13] Ion beam analysis and modifications of surfaces, interfaces and layered materials. Workshop on Utilization of Energetic Ion Beams for Materials Research, July 29-31, 2003, Kalpakkam.

[14] Growth of self-assembled nanostructures by molecular beam epitaxy and their characterizations by scanning tunneling microscopy and spectroscopy.

INAE conference on Nanotechnology (ICON-2003), December 22-23, 2003, Chandigarh. (with a large international participation)

[15] MBE-grown self-assembled nanostructures and single-electron tunneling, MRSI Symposium on Nano and Biotechnology, August 7, 2004, Kharagpur.

[16] Self-assembled nanostructures on silicon: Growth and quantum phenomena, National Conference on Current Trends in Condensed Matter Research, September 20-22, 2004. Kakatiya University, Warangal.

[17] Epitaxial structures on single crystal surfaces, 54^{th} DAE Solid State Physics Symposium, Vadodara, December 14-18, 2009.

[18] Morphology and electronic structure of surface-based epitaxial nanostructures, Condensed Matter Days: Symposium on Condensed Matter Physics, Kalyani, August 25-27, 2010.

[19] Quantum size effect in electronic and magnetic behaviour in epitaxial nanostructures, Current Trends in Condensed Matter Physics, Bhubaneswar, December 15-19, 2010.

[20] Science at the atomic scale, National Conference on Recent Advances in Condensed Matter Physics, Aligarh, March 14-15, 2011.

[21] Nanoscale structures towards future information and communication technologies.mDST TIFAC Meeting – Vision 2035, Bose Institute, Kolkata, 6 June, 2011

[22] Ion beams - a versatile tool for materials modification, Recent Advances in Mechanics and their Application in Nano Engineering and Technology, Itanagar, 1-12 August, 2011

[23] Magnetism in ultrathin layers and ion beam induced effects, National School cum Workshop on Magnetic Phase Transitions and Transformations, UGC-DAE CSR and Jadavpur University, Kolkata, 3-9 August, 2011

[24] Ordered self-organization and fabrication of nanostructures by ion beams. DAE-BRNS Theme Meeting on Emerging Trends in Applications of Lasers and Accelerators in Nanomaterials, BARC, Mumbai, 20-21 October, 2011

[25] Growth of epitaxially oriented nanoscale Ag islands on oxidized Si substrates: Influence of short range order on the oxide surface. Indian Vacuum Society Symposium on Thin Films: Science and Technology, BARC, Mumbai, 9-12 November, 2011

[26] Scanning tunneling microscopy, photoemission electron microscopy and spin polarized low energy electron microscopy, Workshop on Electron Microscopy, Institute of Physics, Bhubaneswar, 22-25 November, 2011

[27] Pattern formation and electronic structure in atomic scale thin films, Conference on “Advanced Functional Materials”, S. N. Bose Centre, Kolkata, 1-2 March, 2012

[28] How does the electronic structure change as a material is thinned down to one atomic layer? First National Seminar on Recent Trends in Condensed Matter Physics Including Laser Applications, Burdwan University, 6-7 March, 2012

[29] Standing waves of X-rays and their diverse applications in condensed matter physics and materials science, S. P. Sengupta Memorial Lecture of Material Society of India, Kolkata Chapter. 08 June, 2012

[30] Wonders in the ultrathin materials world, In the C.V. Raman Session on Materials Science, 100th Indian Science Congress, 03-07 January, 2013)

[31] Radiations in modification and analysis of materials, National Workshop on Applications of Radiation in Physical, Chemical and Life Sciences, 04 – 06 September, 2013

[32] Probing Materials with ion beams, National Short Term Course on Modern Methods in Materials Processing and Characterization, NIT Durgapur, 17 -19 September, 2013

[33] Quantum structures and phenomena – An emerging perspective, Special invited lecture in Multiscale Modeling of Materials and Devices (MMMD-2014), BARC, Mumbai, 30 Oct. – 02 Nov., 2014

[34] Novel structures on surfaces in the dimensional crossover regimes,National Conference on Current Trends in Advanced Materials (CTMat-2014), VECC, Kolkata, 19-21 November, 2014

[35] Induced substrate strain in heteroepitaxial growth, Advances in Nanomaterials using Synchrotron Techniques (ANST-2014), Kolkata, 11-13 December, 2014

[36] Quantum structures and phenomena – an emerging perspective, 26th Annual General Meeting, Materials Research Society of India, Jaipur, 9-11 February, 2015

[37] Quantum nanoelectronics, Keynote lecture in National Conference on Micro and Nano Electronic Systems and Devices (MINO-III), Jaipur, 20-21 March, 2015

[38] Slimming single crystals to fitness: Making them active, functional and beautiful, SERC School on "Single Crystals of Functional Materials and their Applications", SSN College of Engineering, Chennai, 02-22 September, 2015

[39] Playing with atoms for future technology, West Bengal State Level Student Youth Science Fair, Kolkata, 05 October, 2015

[40] Multilayered structures in space research and the effect of their exposure to energetic ions in space, Discussion Meeting on Materials Science Related to Nuclear and Space Research and Industry, SINP, Kolkata, 06-07 October, 2015

[41] Applications of energetic Ion beams in condensed matter physics and materials science, Workshop on the Use of Low Energy Ion Beams, Institute of Physics, Bhubaneswar, 07-09 November, 2015

[42] Standing waves of X-rays and their diverse applications in condense matter physics, Conference on "Synchrotron Radiation: Application to Condensed Matter Physics", IISER, Kolkata, 09 January 2016

[43] Quantum structures and phenomena – An emerging perspective, Solid State Physics Day, IACS, Kolkata, 12 January, 2016

[44] Self-organized quantum structures: Growth, electronic structure and transport, Discussion Meeting on Nano-scale and Atomic-scale Quantum Structures and Devices, IACS, Kolkata, 16-17 February, 2016

[45] Demise of Moore's law and the beginning of the quantum era (Keynote Lecture), National Conference on Advancement in Frontier Physics: From 20th Century to the Present, Bhairab Ganguly College, Kolkata, 26-27 February, 2016

[46] Growth of self-organized quantum structures by molecular beam epitaxy and reactive deposition epitaxy, Conference on Emerging Materials (CEMAT 2016), Bengaluru, 18 – 19 July, 2016

[47] Seeing atoms and playing with atoms leading to future nanotechnologies, (Keynote lecture). National Workshop on Advances in Physics, Patna University, 8 - 9 July, 2016

[48] Advanced nanotechnology from atomic scale growth and atom manipulation,(Keynote lecture). National Conference on Recent Advances in Nanoscience and Nanotechnology (NCRANNT2016), Nehu, Shillong, 8 – 9 September, 2016

[49] Superdense nonmagnetic cobalt, Silver Jubilee Research Conference on "Study of matter using intense radiation sources and under extreme conditions", UGC-DAE CSR, Indore, 3 – 6 November, 2016

[50] Real time investigation of the effect of thermal expansion coefficient mismatch on film-substrate strain partitioning in epitaxial systems, Discussion Meeting on Synchrotron Techniques in Materials Research, Dooars, 2-5 February, 2017

[51] Twist and turn in magnetism, Seminar "Twist and Turn in Physics Research: Special Emphasis on Bio- and Condensed Matter Physics", Jadavpur University, Kolkata, 21-22 February, 2017.

[52] Solid state quantum structures in quantum information processing and quantum technology, Discussion Meeting on Quantum Optics and Quantum Technology (QOQT 2017), Kolkata, 5 – 8 June, 2017

[53] X-ray and neutron scattering in thin films: Reflectivity, standing waves and resonance enhancement, Theme Meeting on Neutron Scattering, Mumbai, 19 August, 2017

[54] Superconductivity in cobalt, 9th Vidyasagar-Satyendranath Bose National Workshop 2018 on Science of Materials: Challenges and Prospects (SMCP- 2018), Vidyasagar University, Midnapore,17-19 Jan 2018.

[55] Quantum tunneling in nature, life and lifestyle, UGC-DAE CSR Indore Centre Research Scholars' Workshop, Indore, 03-06 October, 2018.

[56] Perspectives of surface and interface science, 10th Vidyasagar-Satyendranath Bose National Workshop on Expanding Horizon in Physics, Vidyasagar University, Midnapore, 16-22 January, 2019 (Keynote lecture)

[57] Epitaxial metallic nanowires on semiconductors, National Conference on Recent Developments in Nanoscience & Nanotechnology, Kolkata, 29-31 January, 2019.

[58] Perspectives of surface and interface science, Conference on Recent Advances in Physics, Delhi University, Delhi, 27 February, 2019.

[59] Transition metal silicide nanowires on silicon: Epitaxial growth, self-organization and shape transition**,** The 64th DAE Solid State Physics Symposium, Jodhpur, 18 – 22 December, 2019.

[60] Novel magnetic behaviour and inhomogeneous superconductivity in cobalt thin films with high density cobalt layers, 2nd Indian Materials Conclave and 31st Annual General Meeting of MRSI, Kolkata, 11-14 February, 2020.

[61] Quantum phenomena in surface science, National Conference on Frontiers of Materials Science and Photonics: Issues and Developments, SKB University, Purulia, 5 -6 March, 2020.

[62] Superconductivity: The size matters, Research Scholars' Workshop 2020, UGC-DAE-CSR Indore, 29-30 September, 2020

[63] Superconductivity in cobalt, IIT Delhi, Physics Department Seminar, 02 November, 2020

[64] Epitaxial thin films and their impact on fundamental discoveries and advanced technologies, National Webinar, Gandhi Institute of Engineering and Technology (GIET) University, Gunupur, Rayagada, Orissa, 05 November, 2020

[66] Small angle x-ray scattering (SAXS) and grazing incidence SAXS (GISAXS): Techniques and applications, The 32nd Annual General Meeting of MRSI and the 3rd Indian Materials Conclave, IIT Madras, 20-23 December 2021

[67] X-ray scattering: Fundamentals, Techniques and Applications, Workshop on Scattering Methods for Materials Characterisation, IIT Bhubaneswar, 13 – 20 June 2022

[67] Superconductivity to superconducting quantum computers (Plenary Lecture), Conference on Condensed Matter, Materials Science and Statistical Physics (CMMSSP-2023), Kolkata, 28-29 April 2023

[68] INUP Workshop on X-ray Scattering Techniques for Material Characterisations, IIT Kharagpur, 16-18 November 2023

[69] From principles of quantum mechanics to a superconducting quantum computer, Prof. S. N. Behera Memorial Lecture, Orissa Physical Society 40th Annual Convention and the National Conference on Recent Advances in Physics and Ballistics, Balasore, 10-11 February 2024

[70] Quantum Computing: A new paradigm, Faculty Development Programme, University of Engineering and Management, Kolkata, 23-24 June 2024

[71] Quantum Life: The stride of quantum physics into biology (Keynote Lecture), School of Medical Sciences and Technology Annual Research Scholars' Day, IIT Kharagpur, 12 April 2025

[72] Quantum mechanics to quantum computers: Quantum science to quantum technology, Webinar on 100 years of Quantum Physics, Indian Association of Physics Teachers, 30 May 2025

[73] Quantum science to quantum technology, C. K. Majumdar Summer Workshop in Physics 2025, Kolkata, 15-24 July 2025

Publications

A. Refereed Journals

[1] First-principles investigation of location and electronic structure of adsorbed halogen atoms on semiconductor surfaces, B.N.Dev, K.C.Mishra, W.M. Gibson and T.P.Das, **Phys. Rev. B29, 1101 (1984). (Rapid Commun.)**

[2] Investigation of electronic structure and associated nuclear quadrupole interaction of adsorbed fluorine atoms on silicon surface, K.C.Mishra, B.N.Dev, S.M.Mahapatra, W.M.Gibson and T.P.Das, **Hyperfine Interactions 15/16, 997 (1983).**

[3] An X-ray standing wave interface spectrometric analysis of chemisorption of selenium on silicon (111) and (220) surfaces, B.N.Dev, T.Thundat and W.M. Gibson, **J. Vac. Sci. Technol. A3, 946 (1985).**

[4] An X-ray standing wave interference spectrometric analysis of bromine on cleaved silicon from solution, B.N.Dev, V.Aristov, N.Hertel, T.Thundat and W.M. Gibson, **J. Vac. Sci. Technol. A3, 975 (1985).**

[5] Chemisorption of bromine on cleaved silicon (111) surfaces: An X-ray standing wave interference spectrometric analysis, B.N.Dev, V.Aristov, N.Hertel, T.Thundat and W.M.Gibson, **Surf. Sci. 163, 457 (1985).**

[6] First-principles investigation of geometric and electronic structure of aluminium adsorbed on silicon surface, B.N.Dev, S.M.Mahapatra, K.C.Mishra, W.M.Gibson and T.P.Das, **Phys. Rev. B36, 2666 (1987).**

[7] X-ray standing wave studies of germanium adsorbed on Si(111) surfaces, B. N.Dev, G.Materlik, R.L.Johnson, W.Kranz and P.Funke, **Surf. Sci. 178, 1 (1986).**

[8] Geometrical structures of the Ge/Si(111) interface and the Si(111)(7x7) surfaces, B.N.Dev, G.Materlik, F.Grey, R.L.Johnson and M.Clausnitzer, **Phys. Rev. Lett. 57, 3058 (1986); Phys. Rev. Lett. 59, 1790 (1987)**

[9] Geometric structure of the NiSi2-Si(111) interface: An X-ray standing wave analysis, E.Vlieg, A.E.M.J.Fischer, J. F van der Veen, B.N.Dev and G.Materlik, **Surf. Sci. 178, 36(1986).**

[10] First principle investigation of moderately heavy atoms on semiconductor surfaces - bromine on silicon, S.M.Mahapatra, N.Sahoo, K.C.Mishra, B.N.Dev, W.M.Gibson and T.P.Das , **J. Vac. Sci. Technol. A4, 2441 (1986).**

[11] Nuclear quadrupole interaction associated with adsorbed halogen and chalcogen atoms at semiconductor surfaces, S.M.Mahapatra, N.Sahoo , K.C.Mishra, B.N.Dev, W.M.Gibson and T.P.Das, **Hyperfine Interactions 34, 581 (1987)**

[12] High temperature X-ray standing wave study: Application to melting of monolayers of Pb on Ge(111) surfaces, B.N.Dev, F.Grey, R.L.Johnson and G.Materlik, **Europhys. Lett. 6, 311 (1988).**

[13] Coherent X_ray scattering by phonons: Determination of phonon eigenvectors, H.Spalt, A.Zounek, B.N.Dev and G.Materlik**, Phys. Rev. Lett. 60, 1868(1988); Phys. Rev. Lett. 61, 2819 (1988).**

[14] Investigation of location, electronic structures and associated properties of chalcogen atoms adsorbed on silicon surfaces: Sulfur and selenium, S.M.Mahapatra, B.N.Dev, K.C.Mishra, W.M.Gibson and T.P.Das, **Phys. Rev. B38, 13335 (1988).**

[15] Investigation of electronic structures and associated properties including hyperfine interactions for halogen adsorbed silicon surfaces: Fluorine through iodine, S.M.Mahapatra, B.N.Dev, K.C.Mishra, N.Sahoo, W.M.Gibson and T.P.Das, **Phys. Rev. B38, 12556 (1988).**

[16] Experimental and theoretical investigations of chemisorbed Ga on Si(111), T.Thundat, S.M.Mahapatra, B.N.Dev, W.M.Gibson and T.P.Das, **J. Vac. Sci. Technol. A6, 681 (1988).**

[17] Comment on "Quantitative structural determination of metallic film grown on semiconductor crystal: (√3x√3)R30˚→ (1x1) Pb on Ge(111)", B.N.Dev, **Phys. Rev. Lett. 64, 1182 (1990).**

[18] Electronic structure and associated properties of adsorbed atoms on silicon surfaces including hyperfine interactions, S.M.Mahapatra, B.N.Dev, L.Luo, T.Thundat, W.M.Gibson, K.C.Mishra, N.Sahoo and T.P.Das, **Revs. of Solid State Science, Vol.4, pp 873-900 (1990)** (World Scientific).

[19] Compton Scattering study of the electronic structure of CuO , K.Sekar, B.K.Panda, B.N.Dev and D.P.Mahapatra, **J. Phys. Condens. Matt. 3, 6033 (1991).**

[20] An RBS study on the annealing behaviour of Cu thin films on brominated Si(111) substrates, K. Sekar, P.V.Satyam, G.Kuri, D.P.Mahapatra and B.N.Dev, **Nucl. Instr. and Meth. B71, 308 (1992).**

[21] An RBS study of interdiffusion across a brominated Si(111)/Cu interface with and without a barrier layer, K.Sekar, P.V.Satyam, G.Kuri, D.P.Mahapatra and B.N.Dev, **Nucl. Instr. and Meth. B73, 63 (1993).**

[22] MeV He++ irradiation induced effects in CuO, K.Sekar, P.V.Satyam, D.P.Mahapatra, B.N.Dev, N.C.Mishra, B.S.Acharya and P.Sen, **Nucl. Instr. and Meth. B83, 140 (1993).**

[23] Location of Ti atoms diffused into nearly perfect crystals of $LiNbO_3$: An X-ray standing wave study, Th.Gog, T.Harasimowicz, B.N.Dev and G.Materlik, **Europhys. Lett. 25, 253 (1994).**

[24] X-ray photoelectron spectroscopic study of Si(100) and Si(111) surfaces with chemically adsorbed bromine, K.Sekar, G.Kuri, D.P.Mahapatra, B.N.Dev, J.V.Ramana, Sanjiv Kumar and V.S.Raju, **Surf. Sci. 302, 25 (1994)**

[25] A high energy ion scattering facility for condensed matter physics and material science studies, K.Sekar, P.V.Satyam, G.Kuri, B.Sundaravel, D.P.Mahapatra and B.N.Dev, **Ind. J. Phys. 68A, (1994) p1-22** .

[26] X-ray standing wave studies of the properties of ion beam synthesized epitaxial $Si/CoSi_2/Si$ system, P.V.Satyam and B.N.Dev, **Ind. J. Phys. 68A, 23 (1994).**

[27] Shape transition in the epitaxial growth of gold silicide in Au thin films on Si(111), K.Sekar, P.V.Satyam, G.Kuri, B.Sundaravel, D.P.Mahapatra and B.N.Dev, **Phys. Rev. B51, 14330 (1995).**

[28] A PC-based control and data acquisition for X-ray reflection measurements , P.V. Satyam and B.N.Dev, **Ind. J. Phys. 69A, 415 (1995).**

[29] Growth and alignment of gold silicide islands on Br-passivated vicinal Si(111) surfaces,K.Sekar, G.Kuri, P,V.Satyam, B.Sundaravel, D.P.Mahapatra and B.N.Dev, **Surf. Sci. 339, 96 (1995).**

[30] A high precision technique using X-ray reflectivity for measurement of surface and interface roughness, P.V.Satyam, S.K.Ghose, D.Bahr, G.Kuri, B Sundaravel, B.Rout and B.N.Dev, **Curr. Sci. 69, 526 (1995).**

[31] Epitaxy driven fractal growth, K.Sekar, P.V.Satyam, G.Kuri, D.P.Mahapatra and B.N.Dev, **Solid State Commun. 96, 871 (1995).**

[32] MeV As and Au ion implantation in Si, GaP, GaAs, InSb and LiNbO3 : Study of range and lattice location, G.Kuri, B.Sundaravel, B.Rout, D.P.Mahapatra and B.N.Dev, **Nucl. Instr. Meth. B 111, 234 (1996).**

[33] Ion channeling studies for the determination of orientation of interface in ion beam synthesized Si/CoSi2/Si system, P. V. Satyam, K. Sekar, G. Kuri, B. Sundaravel, S. K. Ghose, B. Rout, D. P. Mahapatra and B. N. Dev, **Indian J. Phys. 70A, 777 (1996).**

[34] Defects in the ion-beam-synthesized epitaxial Si/$CoSi_2$/Si(111) system. P. V. Satyam, K. Sekar, G. Kuri, B. Sundaravel, D. P. Mahapatra and B. N. Dev, **Philos. Mag. Lett. 73, 309 (1996).**

[35] A simple program to simulate Rutherford backscattering spectra, G. Kuri, K. Sekar, P. V. Satyam, D. P. Mahapatra and B. N. Dev, **Ind. J. Phys. 70A, 465 (1996).**

[36] Channeling studies on self-assembled Au4Si islands on Br-passivated Si(111) surfaces, B. Sundaravel, K. Sekar, P. V. Satyam, G. Kuri, B. Rout, S. K. Ghose, D. P. Mahapatra and B. N. Dev, **Ind. J. Phys. 70A, 687 (1996).**

[37] Effect of MeV Au ion implantation on the composition of GaAs upon vacuum annealing: PIXE and XRF studies, G. Kuri, B. Sundaravel, B. Rout, D. P. Mahapatra and B. N. Dev, **Nucl. Instr. Meth. B119, 403 (1996).**

[38] Grazing incidence X-ray standing wave: a novel technique for measuring ultrasmall diffusion coefficients in polymers, S. Dev (nee Sen) and B. N. Dev, **Ind. J. Phys 70 A,189 (1996).**

[39] Determination of strain in a buried epitaxial $CoSi_2$ layer in Si(111) by MeV ion scattering and x-ray rocking curve methods, P. V. Satyam, B. Sundaravel, S. K. Ghose, B. Rout, K. Sekar, D. P. Mahapatra and B. N. Dev, **Ind. J. Phys. 70A, 783 (1996).**

[40] Rutherford backscattering spectrometry and channeling studies on MeV Au-implanted GaAs(100) crystals, G. Kuri, B. Sundaravel, D. P. Mahapatra and B. N. Dev, **Nucl. Instr. Meth. B129, 35 (1997).**

[41] Ion dechanneling studies of defects in an ion-beam-synthesized epilayer sandwich system: Si(111)/$CoSi_2$/Si, P. V. Satyam, K. Sekar, G. Kuri, B. Sundaravel, D. P. Mahapatra, and B. N. Dev, **Appl. Surf. Sci., 125, 173 (1998**)

[42] X-ray standing wave and ion scattering studies on Au-implanted $LiNbO_3$(0001) single crystals, B. N. Dev, G. Kuri, P. V. Satyam, B. Sundaravel, Th. Gog and G. Materlik, **Appl. Surf. Sci., 125, 163 (1998)**

[43] Characterization of a liquid-phase-epitaxy-grown Al0:2Ga0:8As film on a GaAs(111) substrate by RBS, channeling and PIGE analyses, G. Kuri, P. V. Satyam, B. Sundaravel, K. Sekar, D. P. Mahapatra and B. N. Dev, **Nucl. Instr. and Meth. B140, 229 (1998).**

[44] Lattice Strain Measurement of Strained In0:1Ga0:9As=GaAs heterostructures by RBS and Channeling, Azher M. Siddiqui, Anand P. Pathak, B. Sundaravel, Amal K. Das, K. Sekar, B.N. Dev and B.M. Arora, **Nucl. Instr. and Meth B142, 387 (1998).**

[45] Micro ion-beam facility at the Institute of Physics, Bhubaneswar, B. Rout, S. K. Ghose, B. Sundaravel, G. Kuri, D. P. Mahapatra, B. N. Dev, P. Sen, H. Bakhru and A. W. Haberl, **Radiat. Phys. Chem. 51, 677 (1998).**

[46] High energy Ni implantation in InP, T. K. Chini, S. R. Bhattacharya, D. Basu, B. Rout, S. Ghose, B. Sundaravel, B. N. Dev, F. Okuyama, M. Kaneko, **J. Mater. Sci. Lett. 17, 1117 (1998).**

[47] Epitaxial growth of Ag on Br-passivated Si(111) under high vacuum, B. Sundaravel, Amal K. Das, S. K. Ghose, K. Sekar and B. N. Dev, **Appl. Surf. Sci. 137, 11 (1999).**

[48] XPS and SIMS analysis of gold silicide grown on a bromine passivated Si(111) substrate, B. Sundaravel, K. Sekar, G. Kuri, P. V. Satyam, B. N. Dev, Santanu Bera and S. V. Narasimhan, P. Chakraborty and F. Caccavale, **Appl. Surf. Sci. 137, 103 (1999).**

[49] High energy high dose Si implantation into Ge and effect of subsequent thermal annealing, G. Kuri, D. P. Mahapatra and B. N. Dev, **Rad. Eff. Defects in Solids, 147, 133 (1999).**

[50] Materials modifications in heavy ion interactions with single crystals and their ion beam characterization, B. N. Dev, **Nucl. Instr. and Meth. B156, 258 (1999).**

[51] Improvement of Ag(111) epitaxy on Si(111) by MeV Si+ irradiation and ion microbeam analysis of thermally induced morphology, B. Sundaravel, Amal K. Das, S. K. Ghose, B. Rout and B. N. Dev, **Nucl. Instr. and Meth. B156, 130 (1999).**

[52] Radiation damage and surface modification of GaAs(001) by MeV C^{+} and C^{2+} co-implantation with Ga^{2+}, S. K. Ghose, G. Kuri, Amal K. Das, B. Rout D. P. Mahapatra and B. N. Dev, **Nucl. Instr. and Meth. B156, 125 (1999).**

[53] Resonance enhancement of X-rays in layered materials: Application to surface enrichment in polymer blends, B. N. Dev, Amal K. Das, S. Dev, D. W. Schubert, M. Stamm and G. Materlik**, Phys. Rev. B61, 8462 (2000).**

[54] Spontaneous nanostructural island formation and layer-to-island mass transport in Ge layers on Si(111) surfaces, Amal K. Das, S. K. Ghose, B. N. Dev, G. Kuri and T. R. Yang, **Appl. Surf. Sci. 165, 260 (2000).**

[55] Self-assembled gold silicide wires on bromine-passivated Si(110) surfaces, B. Rout, B. Sundaravel, Amal K. Das, S. K. Ghose, K. Sekar, D. P. Mahapatra and B. N. Dev, **J. Vac. Sci. Technol. B18, 1847 (2000).**

[56] Aspects of surface and interface characterizations by X-rays: The research programme at IOP, Bhubaneswar, B. N. Dev, **(invited article) Curr. Sci. 78, 1511 (2000).**

[57] Self-assembled Ge nanostructures on polymer-coated silicon: growth and characterization, Amal K. Das, J. Kamila, B. N. Dev, B. Sundaravel and G. Kuri, **Appl. Phys. Lett. 77, 951 (2000).**

[58] Surface and near-surface modifications and analysis by MeV ions, B. N. Dev, **(invited article) Curr. Sci. 80, 1550 (2001).**

[59] Response to "Comment on Self-assembled Ge nanostructures on polymer-coated silicon: Growth and Characterization", Amal K. Das, J. Kamila, B. N. Dev, B. Sundaravel and G. Kuri, **Appl. Phys. Lett. 78, 3552 (2001).**

[60] X-ray Standing wave and reflectometric characterization of multilayer structures, S. K. Ghose and B. N. Dev, **Phys. Rev. B63, 245409 (2001).**

[61] Ion-irradiation induced mixing, interface broadening and period dilation in Pt/C multilayers, S. K. Ghose, D. K. Goswami, B. Rout, B. N. Dev, G. Kuri, and G. Materlik, **Appl. Phys. Lett. 79, 467 (2001).**

[62] Status of ion microbeam facility at the Institute of Physics, Bhubaneswar, India, B. Rout, S. K. Ghose, D. P. Mahapatra, B. N. Dev, H. Bakhru and A. W. Haberl, **Nucl. Instr. Meth. B181, 110 (2001)**.

[63] Characterization of microstructures formed on MeV ion-irradiated silver films on Si(111) surfaces, B. Rout, J. Kamila, S. K. Ghose, D. P. Mahapatra and B. N. Dev, **Nucl. Instr. Meth. B181, 268 (2001)**.

[64] Resonance enhancement of X-rays and fluorescence yield from marker layers in the thin films, S. K. Ghose, B. N. Dev and Ajay Gupta, **Phys. Rev. B 64, 233403 (2001).**

[65] Redistribution of Ni implanted into InP, T. K. Chini, S. K. Ghose, B. Rout, B. N. Dev, M. Tanemura and F. Okuyama, **Eur. Phys. J. AP 13, 83 (2001)**

[66] Clustering in Pb thin films on Si(111) and Pb-induced Si surface ordering, B. Rout, J. Kamila, M. Rundhe and B. N. Dev, **Nucl. Instr. Meth. B 190, 641 (2002)**.

[67] Ion beam studies in strained layer superlattices, A. P. Pathak, B. N. Dev and A. Turos, **Nucl. Instr. Meth. B 193, 319 (2002)**.

[68] Self-assembled growth of nanostructural Ge islands on bromine-passivated Si(111) surface at room temperature, Amal K. Das, B. N. Dev, B. Sundaravel, E. Z. Luo, J. B. Xu and I. H. Wilson, **Pramana - J. Phys. 59, 133 (2002).**

[69] Growth of self-assembled nanostructures by molecular beam epitaxy. D. K. Goswami, B. Satpati, P. V. Satyam and B. N. Dev, **Curr. Sci. 84, 903 (2003).**

[70] Crater formation in gold nano-islands due to MeV self-ion irradiation. P. V. Satyam, J. Kamila, S. Mohapatra, B. Satpati, D. K. Goswami, B. N. Dev, R. E. Cook, L. Assoud, J. Wang and N. C. Mishra. **J. Appl. Phys. 93, 6399 (2003).**

[71] Nanoscale self-affine smoothing by ion bombardment. D. K. Goswami and B. N. Dev, **Phys. Rev. B 68, 033401 (2003).**

[72] Low current MeV Au2+ ion-induced amorphization in silicon: Rutherford backscattering spectrometry and transmission electron microscopy study. J. Kamila, B. Satpati, D. K. Goswami, M. Rundhe, B. N. Dev and P. V. Satyam, **Nucl. Instr. Meth. B 207, 291 (2003).**

[73] Ion irradiation induced impurity redistribution in Pt/C multilayers, S. Bera, D. K. Goswami, K. Bhattacharjee and B. N. Dev, **Nucl. Instr. Meth. B 212, 530 (2003)**

[74] Clustering in Pb thin films on bromine-passivated Si(111) surfaces. M. Rundhe, S. Mathew, B. R. Sekhar and B. N. Dev, **Nucl. Instr. Meth. B 212, 314 (2003)**

[75] Observation of smoothing and self-affine fractal roughness on MeV ion-irradiated Si surfaces, D. K. Goswami and B. N. Dev, **Nucl. Instr. Meth. B 212, 253 (2003).**

[76] Ion beam characterization and engineering of strain in semiconductor multilayers, S. V. S. Nageswara Rao, A.P. Pathak, A.M. Siddiqui, D. K. Avasthi, C. Muntele, D. Ila, B. N. Dev, R. Muralidharan, F. Eichhorn, R. Groetzschel and A. Turos, Nucl**. Instr. Meth. Phys. Res. B 212, 442 (2003).**

[77] Study of sputtered particles from gold nanoislands due to MeV self-ion irradiation, B. Satpati, D. K. Goswami, S. Roy, T. Som, B. N. Dev and P. V. Satyam, **Nucl. Instr. Meth. B 212, 332 (2003).**

[78] Energy spike induced effects in MeV ion irradiated nanoislands, B. Satpati, D. K. Goswami, U. D. Vaishnav, T. Som, B. N. Dev and P. V. Satyam, **Nucl. Instr. Meth. B 212, 157 (2003).**

[79] Swift heavy ion induced interface modification in Ni/Ge, T. Som, B. Satpati, P. V. Satyam, D. Kabiraj, P. Ayyub, S. Ghosh, Ajay Gupta, B. N. Dev and D. K. Awasthi, **Nucl. Instr. Meth. B. 212, 206 (2003)**

[80] Understanding the quantum size effects in ZnO nanocrystals, Ranjani Viswanatha, Sameer Sapra, B. Satpati, P. V. Satyam, B. N. Dev, and D. D. Sarma, **J. Mater. Chem. 14, 661 (2004).**

[81] Ion-beam-induced embedded nanostructures and nanoscale mixing. B. Satpati, P.V. Satyam, T. Som and B.N. Dev, **J. Appl. Phys. 96, 5212 (2004**).

[82] Synthesis and Characterization of Mn doped ZnO Nanocrystals, Ranjani Viswanatha, Sameer Sapra, B. Satpati, P. V. Satyam, B. N. Dev, and D. D. Sarma, **J. Phys. Chem. B 108, 6303 (2004).**

[83] Shape variation in epitaxial microstructures of gold silicide grown on Br-passivated Si(111) surfaces. S. Chakraborty, J. Kamila, B. Rout, B. Satpati, P. V. Satyam and B. N. Dev, **Surf. Sci. 549, 149 (2004).**

[84] Swift heavy ion induced interface modification in Ni/Ge. T. Som, B. Satpati, P. V. Satyam, D. Kabiraj, P. Ayyub, S. Ghosh, Ajay Gupta, B. N. Dev and D. K. Avasthi, **Nucl. Instr. Meth. B 212, 206 (2003).**

[85] Synchrotron X-radiation in studies of layered and self-assembled structures. B. N. Dev, **Radiat. Phys. Chem. 70, 525 (2004).**

[86] Nanoscale ion-beam mixing in Au-Si and Ag-Si eutectic systems. B. Satpati, P.V. Satyam, T. Som and B. N. Dev, **Appl. Phys. A 79, 447 (2004).**

[87] Ge growth on ion-irradiated Si self-affine fractal surfaces. D.K. Goswami, K. Bhattacharjee and B.N. Dev, **Surf. Sci. 564, 149 (2004).**

[88] Nanoscale self-affine surface smoothing: Dependence on ion fluence and initial surface roughness, K. Bhattacharjee, S. Bera, D.K. Goswami and B.N. Dev, **Nucl. Instr. Meth. Phys. Res. B 230, 524 (2005).**

[89] Pattern growth of Ge films on PtBA polymer substrates, P. V. Satyam, S. Roy, B. Satpati, J. Ghatak, K. Bhattacharjee, J. Kamila, B. N. Dev, J. Wang, R. Guico, S. Narayanan, C. Liu, R. E. Cook and L. Assoufed, **Physica E 27, 235 (2005).**

[90] Role of Pb for Ag growth on H-passivated Si(100) surfaces. S. Mathew, B. Satpati, B. Joseph and B.N. Dev, **Appl. Surf. Sci. 249, 31 (2005).**

[91] Replicating nanostructures on silicon by low energy ion beams. B. Satpati and B. N. Dev, **Nanotechnology 16, 524 (2005).**

[92] Size distribution of sputtered particles from Au nanoislands due to MeV self-ion bombardment, B. Satpati, J. Ghatak, P.V. Satyam and B.N. Dev, **J. Appl. Phys. 98, 064904 (2005).**

[93] Quantum Dots. B. N. Dev, **Invited review article** in the special issue on **"NANO SCIENCE AND TECHNOLOGY" of the Transactions of Indian Institute of Metals, Vol. 58 (2005) 1177-1188.**

[94] Energy dependent sputtering of nanoclusters from a nanodisperse target, B. Satpati, J. Ghatak, B. Joseph, T. Som, D. Kabiraj, B.N. Dev, and P. V. Satyam, **Nucl. Instr. Meth. Phys. Res. B 244, 278 (2006).**

[95] Characterization of ion-beam-induced nanostructures, J. Ghatak, B. Satpati, M. Umananda, T. Som, B. N. Dev, K. Akimoto, K. Ito, T. Emoto and P.V. Satyam, **Nucl. Instr. Meth. Phys. Res. B 244, 45 (2006).**

[96] Ion-beam induced transformations in nanoscale multilayers: Evolution of clusters with preferred lengh scales, S. Bera, B. Satpati, K. Bhattacharjee, P. V. Satyam and B. N. Dev, **J. Appl. Phys. 99, 074301 (2006).**

[97] Nonmagnetic to magnetic nanostructures via ion irradiation, B. N. Dev, S. Bera, B. Satpati, D. K. Goswami, K. Bhattacharjee, P. V. Satyam, K. Yamashita, O. M. Liedke, K. Potzger, J. Fassbender, F. Eichhorn and R. Groetzschel, **Microelectronic Engineering 83, 172 (2006).**

[98] Proton microbeam irradiation effects on PtBA polymer, J. Kamila, S. Roy, K. Bhattacharje, B. N. Dev, R. Guico, J. Wang, B. Rout, A. W. Haberl, P. Ayyub and P. V. Satyam, **Bull. Mater. Sci., 29, 101 (2006).**

[99] Preferential heights in the growth of Ag islands on Si(111)-(7x7) surfaces, D.K. Goswami, K. Bhattacharjee, B. Satpati, S. Roy, G. Kuri, P.V. Satyam and B.N. Dev, **Surf. Sci. 601, 603 (2007).**

[100] Magnetism in C60 films induced by proton irradiation, S. Mathew, B. Joseph, B.N. Dev, R. Nirmala and S.K. Malik**,** R. Kesavamoorthy**, Phys. Rev. B 75, 075426 (2007).**

[101] Microstructures of a Pt/Ni/C multi-trilayer system: An X-ray reflectivity study, Sumalay Roy, S. Bera and B.N.Dev, **J. Nanosci. Nanotechnol. 7, 2182 (2007).**

[102] Two mega-electron volt proton irradiation effects on fullerene films, S. Mathew, B. Satpati, B. Joseph, B. N. Dev and R. Kesavamoorthy, **Rad. Eff. Defects in Solids 162, 223 (2007).**

[103] Probing atomic migration in nanostructured multilayers: Application of X-ray standing wave fields, S. Bera, K. Bhattacharjee, G. Kuri and B. N. Dev, **Phys. Rev. Lett. 98, 196103 (2007).**

[104] Coexistent compressive and tensile strain in Ag thin films on Si(111)−(7×7) surfaces, D. K. Goswami, K. Bhattacharjee, B. Satpati,S. Roy, G. Kuri, P. V. Satyam and B. N. Dev, **App. Surf. Sci. 253, 9142 (2007)**

[105] Microstructural evolution, atomic migration and FePt nanoparticle formation in ion-irradiated Pt(Fe)/C(Fe) multilayers. S. Bera, Sumalay Roy, K. Bhattacharjee, G. Kuri and B. N. Dev, **J. Appl. Phys. 102, 014308 (2007)**

[106] KeV Ag ion irradiation induced damage on multiwalled carbon nanotubes. S. Mathew, U. M. Bhatta, B. Joseph and B. N. Dev, **Nucl. Instr. Meth. Phys. Res. B 264 (2007) 36**

[107] The effects of 2 MeV Ag ion irradiation on multiwalled carbon nanotubes. S. Mathew, U.M. Bhatta, J. Ghatak, B.R. Sekhar, B.N. Dev, **Carbon 45 (2007) 2659**

[108] Growth of fullerene on Ag and hydrogen-passivated Si substrates: Effect of electron beam exposure on growth modes. M. Rundhe and B. N. Dev, **Appl. Surf. Sci. 254 (2008) 4531**

[109] Electronic structure of Ag-adsorbed nanowire-like stripes on Si(110)-(16x2) surfaces. I. An *in-situ* STM and STS experiment. K. Bhattacharjee, A. Roy, K. Kundu, B.N. Dev, **Phys. Rev. B 77 (2008) 115430-1 – 115430-7**

[110] Electronic structure of Ag-adsorbed nanowire-like stripes on Si(110)-(16x2) surfaces. II. A one-dimensional tight-binding model with Green's function approach. K. Bhattacharjee, A. Roy, K. Kundu, B.N. Dev, **Phys. Rev. B 77 (2008) 115431-1 – 115431-15**

[111] Surface roughness of ion-bombarded Si(1 0 0) surfaces: Roughening and smoothing with the same roughness exponent. Anupam Roy, K. Bhattacharjee, H.P. Lenka, D.P. Mahapatra and B.N. Dev, **Nucl. Instr. Meth. Phys. Res. B 266 (2008) 1276**

[112] X-ray photoelectron and Raman spectroscopic studies of MeV proton irradiated graphite. S. Mathew, B. Joseph, B. R. Sekhar, B. N. Dev, **Nucl. Instr. Meth. Phys. Res. B 266 (2008) 3241**

[113] ZnO 1-D nanostructures: Low temperature synthesis and characterizations, Apurba Dev, S. Chaudhury, B. N. Dev, **Bull. Mater. Sci. 31 (2008) 551.**

[114] Structural modifications of diamond like carbon films induced by MeV nitrogen ion irradiation, S. Mathew, U. M. Bhatta, A.K.M. Maidul Islam, M. Mukherjee, N.R. Ray and B.N. Dev, **Appl. Surf. Sci. 255 (2009) 4796.**

[115] Ultrasmall Ge islands with low diameter-to-height aspect ratio on Si(100)-(2×1) surfaces, K. Bhattacharjee, Anupam Roy, Jay Ghatak, P. V. Satyam and B. N. Dev, **Appl. Surf. Sci. 256 (2009) 356**

[116] Growth of oriented crystalline Ag nanoislands on air-exposed Si(001) surfaces, A. Roy, K. Bhattacharjee, J. K. Dash and B. N. Dev, **Appl. Surf. Sci. 256 (2009) 36**

[117] Ge growth on self-affine fractal Si surfaces: Influence of surface roughness, A. Roy, K. Bhattacharjee, H. P. Lenka, D. P. Mahapatra and B. N. Dev, **J. Phys D: Applied Physics 42 (2009) 145303**

[118] Growth of (√3 × √3)-Ag and (111) oriented Ag islands on Ge/Si(111) surfaces, A. Roy, K. Bhattacharjee and B. N. Dev, **Appl. Surf. Sci. 256 (2009) 508**

[119] Estimation of diffusion coefficient by photoemission electron microscopy in ion-implanted nanostructures, R. Batabyal, S. Patra, A. Roy, S. Roy, L. Bischoff and B. N. Dev, **Appl. Surf. Sci. 256 (2009) 536**

[120] Lateral straggling and its influence on lateral diffusion in implantation with a focused ion beam, R. Batabyal, J. C. Mahato, A. Roy, S. Roy, L. Bischoff and B. N. Dev, **Nucl. Instr. Meth. Phys. Res. B 269 (2011) 856**

[121] Magnetic exchange bias and its ion beam induced enhancement in a nanoscale Si/Co/Si system, S. Roy, M. Menyhárd, S. Majumdar, D. Novikov and B. N. Dev, **J. Mater. Sci. Eng. 5 (2011) 200**

[122] Growth mechanisms for wire-like epitaxial gold silicide islands on Si(1 1 0) Surfaces, R. Batabyal, S. Patra, A. Roy and B.N. Dev, **Appl. Surf. Sci. 257 (2011) 3248**

[123] Ion-irradiated Laterally Graded Ni/C Multilayers: A Combined X-ray Standing Wave and X-ray Reflectivity Analysis, B. N. Dev, S. Roy, S. Bera, Y. Tawara, N. Schell, J. Grenzer, J. v. Borany and R. Grötzschel, **Jap. J. Appl. Phys. 50 (2011) 052501**

[124] X-ray standing waves in a multi-trilayer system with linearly varying period, Sumalay Roy and B.N. Dev, **Appl. Surf. Sci. 257 (2011) 7566**

[125] Growth of oriented Ag nanocrystals on air-oxidized Si surfaces: An in-situ reflection high energy electron diffraction study, A. Roy, K. Bhattacharjee, J.K. Dash and B.N. Dev, **Thin Solid Films 520 (2011) 853**

[126] Epitaxy-like orientation of nanoscale Ag islands grown on air-oxidized Si(110)-(5×1) surfaces, Anupam Roy, J. K. Dash, A. Rath and B. N. Dev, **Surf. Interface Anal. 44 (2012) 513**

[127] Growth of epitaxially oriented Ag nanoislands on air-oxidized Si(111)-(7×7) surfaces: Influence of short-range order on the substrate, A. Roy, K. Bhattacharjee, J. Ghatak and B. N. Dev, **Appl. Surf. Sci. 258 (2012) 2255**

[128] Ion irradiation induced evolution of nanostructure in a graded multi-trilayer system, Sumalay Roy, J Ghatak and B N Dev, **Appl. Surf. Sci. 258 (2012) 3967**

[129] Patterns in Ge cluster growth on clean and oxidized Si(111)-(7×7) surfacesAnupam Roy, Trilochan Bagarti, K. Bhattacharjee, K. Kundu, B. N.Dev, **Surf. Sci. 606 (2012) 777**

[130] Fractal pattern formation in thermal grooving at grain boundaries in Ag films on Si(111) surfaces, A. Roy, B. Sundaravel, R. Batabyal and B. N. Dev. **Thin Solid Films 520 (2012) 5086**

[131] Ion beam induced mixing in a Si/Co/Si system involving ultrathin layers: A grazing incidence x-ray standing wave study, Sumalay Roy and B.N. Dev, **Phys. Status Solidi A 209 (2012) 1511**

[132] Nanodot to nanowire: A strain-driven shape transition in self-organized endotaxial $CoSi_2$ on Si(100), J. C. Mahato, Debolina Das, R. R. Juluri, R. Batabyal, A. Roy, P. V. Satyam and B. N. Dev, **Appl. Phys. Lett. 100 (2012) 263117**

[133] A reaction diffusion model of pattern formation in clustering of adatoms on silicon surfaces, Trilochan Bagarti, Anupam Roy, K. Kundu, B. N. Dev, **AIP Advances 2 (2012) 042101**

[134] Interfacial mixing in as-deposited Si/Ni/Si layers analyzed by x-ray and polarized neutron reflectometry, Debarati Bhattacharya, S. Basu, S. Singh, Sumalay Roy and B. N. Dev, **Appl. Surf. Sci. 263 (2012) 666**

[135] Ascertaining the nano-cluster formation within ion-irradiated Pt/Ni/C multi-trilayer with X-ray Absorption Spectroscopy, Nitya Ramanan, Sumalay Roy, Debdutta Lahiri, S. M. Sharma and B N Dev, **J. Synchrotron Rad. 20 (2013) 137**

[136] First principles electronic structure of coincidence site epitaxial Ag/Si (111) interface, A.H.M. Abdul Wasey, R. Batabyal, J.C. Mahato, B.N. Dev, Y. Kawazoe and G.P. Das, **Phys. Status Solidi B 250 (2013) 1313**

[137] Negative differential resistance in electron tunneling in ultrathin films near the two-dimensional limit, R. Batabyal, A.H.M. Abdul Wasey, J. C. Mahato, Debolina Das, A. Roy, G. P. Das and B. N. Dev, **J. Appl. Phys. 113 (2013) 034308**

[138] Uniformity of epitaxial nanostructures of $CoSi_2$ via defect control of the Si(111) surface, J. C. Mahato, Debolina Das, A. Roy, R. Batabyal, R. R. Juluri, P. V. Satyam and B. N. Dev, **Thin Solid Films 534 (2013) 296**

[139] Self-organized one-atom thick fractal nanoclusters via field-induced atomic transport, R. Batabyal, J. C. Mahato, Debolina Das, Anupam Roy and B. N. Dev, **J. Appl. Phys. 114 (2013) 064304**

[140] Roughening in electronic growth of Ag on Si(111)-(7x7) surfaces, A. Pal, J. C. Mahato, B. N. Dev and D. K. Goswami, **ACS Appl. Mater. Interfaces 5 (2013) 9517**

[141] Self-organized trench-island structures in epitaxial cobalt silicide growth on Si(111), J. C. Mahato, Debolina Das, R. Batabyal, Anupam Roy and B. N. Dev, **Surf. Sci. 620 (2014) 23**

[142] The effect of exclusion on nonlinear reaction–diffusion system in inhomogeneous media, Trilochan Bagarti, Anupam Roy, K. Kundu and B.N. Dev, **Physica A 405 (2014) 52**

[143] Electronic structure in the crossover regimes in lower dimensional structures, R. Batabyal and B. N. Dev, **Physica E 64 (2014) 224**

[144] Self-organized patterns along sidewalls of iron silicide nanowires on Si(110) and their origin, Debolina Das, J. C. Mahato, Bhaskar Bisi, B. Satpati and B. N. Dev, **Appl. Phys. Lett. 105 (2014) 191606**

[145] Defect engineered d0 ferromagnetism in ITO nanostructures and nanocrystalline thin-films,G. G. Khan, S. Ghosh, A Sarkar, G. Mandal, G Dev Mukherjee, U Manju, Nasrin Banu and B. N. Dev, **J. Appl. Phys. 118 (2015) 074303**

[146] Evolution of Fermi level state density in ultrathin films near the two-dimensional limit: experiment and theory, R. Batabyal, A. H. M. Abdul Wasey, J. C. Mahato, Debolina Das, G. P.Das and B. N. Dev, **arXiv:1412.1238**

[147] Ag-induced √3 reconstruction on Si(111)/Ge-(5×5) and the surfactant behaviour of Ag in further growth of Ge, J. C. Mahato, Debolina Das, Bhaskar Bisi, Arindam Pal and B. N. Dev, **Appl. Surf. Sci. 356 (2015) 249**

[148] Evolution of the density of states at the Fermi level in ultrathin films near the two-dimensional limit: experiment and theory, R. Batabyal, A. H. M. Abdul Wasey, J. C. Mahato, Debolina Das, G. P. Das and B. N. Dev, **Appl. Surf. Sci. (submitted)**

[149] Fractal growth via a diffusion limited aggregation model including edge diffusionA. Ghosh, R. Batabyal, G. P. Das and B. N. Dev, **AIP Advances 6 (2016) 015301**

[150] Real time investigation of the effect of thermal expansion coefficient mismatch on film-substrate strain partitioning in Ag/Si systems, Debolina Das, Nasrin Banu, Bhaskar Bisi, J. C. Mahato, V. Srihari, Rumu Halder, and B. N. Dev, **J. Appl. Phys. 120 (2016) 135301**

[151] Evidence of formation of superdense nonmagnetic cobalt**,** Nasrin Banu, Surendra Singh, B. Satpati, A. Roy, S. Basu, P. Chakraborty, Hema C. P. Movva, V. Lauter and B. N. Dev, **Sci. Rep. 7 (2017) 41856, arXiv:1602.05713**

[152] Nanoscale η-NiSi formation via ion irradiation of Si/Ni/Si **,** Nasrin Banu, Biswarup Satpati, Anjan Bhukta and B. N. Dev**, J. Appl. Phys. 121 (2017) 045302**

[153] Fluence dependent oscillatory amorphization and recrystallization in ion irradiation, Nasrin Banu, B. Satpati and B. N. Dev, **Nucl. Instr. Meth. Phys. Res. B 406 (2017) 689**

[154] Ion irradiation effects on a magnetic Si/Ni/Si trilayer and lateral magnetic-nonmagnetic multistrip patterning by focused ion beam, B. N. Dev, Nasrin Banu, J. Fassbender, J. Grenzer, N. Schell, L.Bischoff, R.Groetzschel and J. McCord, **Indian. J. Phys. 91 (2017) 1167**

[155] Unidirectional endotaxial cobalt di-silicide nanowires on Si(110) substrates, J. C. Mahato, Debolina Das, Nasrin Banu, Biswarup Satpati and B. N. Dev, **Nanotechnology 28 (2017) 425603**

[156] High density nonmagnetic cobalt in thin films, Nasrin Banu, S. Singh, S. Basu, A. Roy, H. C. P. Movva, V. Lauter, B. Satpati and B. N. Dev, **Nanotechnology 29 (2018) 195703**

[157] Magnetocaloric effect of polycrystalline Sm0.5Ca0.5MnO3 compound: investigation of low temperature magnetic state, Kalipada Das, Nasrin Banu, I. Das and B. N. Dev, **Solid State Commun. 274 (2018) 36**

[158] Probing of O2 vacancy defects and correlated magnetic, electrical and photoresponse properties in indium-tin oxide nanostructures by spectroscopic techniques, Shyamsundar Ghosh and B. N. Dev, **Appl. Surf. Sci. 439 (2018) 891**

[159] Significantly large magnetocaloric effect in polycrystalline $La_{0.83}Sr_{0.17}MnO_3$ near room temperature, Kalipada Das, Nasrin Banu, I. Das and B. N. Dev, **Physica B: Condensed Matter 545 (2018) 438**

[160] Oscillatory magnetic behavior in an ion-irradiated Si/Ni/Si sandwich system, Nasrin Banu, B. Satpati, V. Srihari and B. N. Dev, **Physica B: Condensed Matter 550 (2018) 199**

[161] Electron energy loss and X-ray absorption behaviour of high-density nonmagnetic cobalt, Nasrin Banu, Prabhat Kumar, Nidhi Pandey, Biswarup Satpati, Mukul Gupta and B. N. Dev, **Thin Solid Films 675 (2019) 177**

[162] Towards x-ray waveguide formation upon ion irradiation of a Co thin film on Si(111), Nasrin Banu, S. Roy, B. Satpati, Surendra Singh, Anjan Bhukta, P Chakraborty, S Basu and B N Dev, **Mater. Res. Express 6 (2019) 056419**

[163] Investigation of size-dependent magnetic ordering in charge ordered antiferromagnetic nanoparticles via magnetocaloric effect, K. Das, Nasrin Banu, I. Das and B. N. Dev, **J. Mag. Mag. Mater. 487 (2019) 165309**

[164] Superconductivity of cobalt in thin films, Nasrin Banu, M. Aslam, Arpita Paul, Sanjib Banik, S. Das, S. Datta, A. Roy, I. Das, G. Sheet, U. V. Waghmare and B. N. Dev, **arXiv:1710.06114**

[165] Inhomogeneous superconductivity in high-density nonmagnetic cobalt in a polycrystalline Co film, Nasrin Banu, M. Aslam, Arpita Paul, Sanjib Banik, S. Das, S. Datta, A. Roy, I. Das, G. Sheet, U. V. Waghmare, S. Ramakrishnan and B. N. Dev, **EPL, 131 (2020) 47001; doi: 10.1209/0295-5075/131/47001**

[166] Tuning the length/width aspect ratio of epitaxial unidirectional silicide nanowires on Si(110)-16×2 surfaces, J. C. Mahato, Debolina Das, P. Das, T. K. Chini and B. N. Dev, **Nano Express 1 (2020) 020045**

[167] Sequential growth of self-organized epitaxial FeSi2 and CoSi2 nano-structures on Si(111)-7 × 7 surfaces, J.C. Mahato, Debolina Das, Arindam Pal, Prabir Pal, B.N. Dev, **Appl. Surf. Sci. 572 (2022) 151397**

[168] Strain induced effects on the electronic and phononic properties of 2H and 1T' monolayer MoS2 , Saumen Chaudhuri, A. K. Das, G. P. Das, and B. N. Dev, **Physica B 655 (2023) 414701**

[169] Ab-initio study of electronic and lattice dynamical properties of monolayer ZnO under strain, Saumen Chaudhuri, A. K. Das, G. P. Das and B. N. Dev, **J. Electronic Materials 52 (2023) 1633**

[170] Strain driven anomalous anisotropic enhancement in the thermoelectric performance of monolayer MoS2, Saumen Chaudhuri, Amrita Bhattacharya, A. K. Das, G. P. Das, and B. N. Dev, **Appl. Surf. Sci. 626 (2023) 157139**

[171] Hydrostatic pressure-induced anomalous enhancement in the thermoelectric performance of monolayer MoS_2, Saumen Chaudhuri, Amrita Bhattacharya, A. K. Das, G. P. Das, and B. N. Dev, **ACS Applied Energy Materials 6 (2023) 11694**

[172] Understanding the role of four-phonon scattering in the lattice thermal transport of monolayer MoS_2, Saumen Chaudhuri, Amrita Bhattacharya, A. K. Das, G. P. Das, and B. N. Dev, **Phys. Rev. B 109, (2024) 235424**

[173] Unraveling the curious tensile strain-induced enhancement in the lattice thermal transport of monolayer ZnO: A first-principles study, Saumen Chaudhuri, Amrita Bhattacharya, A. K. Das, G. P. Das, and B. N. Dev, **ACS Appl. Mater. Interfaces 17 (2025) 43786**

[174] Effect of UHV annealing on morphology and roughness of sputtered Si(111)-7x7 surfaces, J. C. Mahato, A.Roy, R. Batabyal, D. Das, R. Gorain, T. Dey, B. N. Dev, **Journal of Crystal Growth 653 (2025) 128005**

[175] Two superconducting thin film systems with potential integration of different quantum functionalities, Snehal Mandal, Biplab Biswas, S. Purkait, A. Roy, B. Satpati, I. Das and B. N. Dev, **Mater. Quantum Technol. 5 (2025) 026001**

B. Proceedings of International Conferences

[1] Submonolayer of lead on silicon(111) surfaces: An X-ray standing wave analysis, B. N. Dev, G. Materlik, F. Grey and R. L. Johnson, In the "Structure of Surfaces II", J. F. van der Veen and M. A. Van Hove(eds), Springer Verlag, 1988, p340.

[2] Electronic structure and Properties of lithium and sodium atoms adsorbed on silicon (111) surfaces, S. M. Mahapatra, N. Sahoo, B. N. Dev, K. C. Mishra, W. M. Gibson and T. P. Das, Bull. Am. Phys. Soc. 33, 572 (1988).

[3] X-ray standing waves in noncentrosymmetric crystals and the phase problem in crystallography, B. N. Dev and G. Materlik in "Resonance Anomalous X-ray Scattering: Theory and Applications", G. Materlik, C. J. Sparks and K. Fischer (Eds.), Elsevier Science B.V, (1994), p.119-143.

[4] Structural and phase transition studies of layered materials by X-ray standing waves, B. N. Dev, in “X-ray and Inner-Shell Processes”, Eds. R. L. Johnson, H. Schmidt-Boecking and B. F. Sonntag (AIP Press, Woodbury, New York, 1997) pp.249-266.

[5] X-ray standing wave studies on crystalline materials using synchrotron radiation, B. N. Dev, in ”Powder Diffraction”, (Ed.) S. P. Sengupta (Allied Publishers, New Delhi, 1998) pp. 118-132

[6] Growth of self-assembled epitaxial germanium nanoislands on silicon surfaces by molecular beam epitaxy. D. K. Goswami, B. Satpati, P. V. Satyam and B. N. Dev in Physics at “Surfaces and Interfaces” Edited by B. N. Dev. (World Scientific, Singapore, 2003) 93.

[7] Layered synthetic microstructures: importance of a combined X-ray standing wave and X-ray reflectivity analysis, B. N. Dev. In “Physics at Surfaces and Interfaces”, Edited by B. N. Dev (World Scientific, Singapore, 2003) 109.

[8] Epitaxial self-assembled nanostructures on silicon, B. N. Dev, Proceedings of the International Conference on Nanomaterials: Synthesis, Characterization and Application, (Eds.) S. Bandyopadhyay et al (Tata McGraw-Hill, New Delhi, 2004) pp.233-242.

[9] X-Ray and polarized neutron reflectometry: characterization of Si/Co/Si and Si/Ni/Si systems, D. Bhattacharya, S. Basu, A. K. Poswal, S. Roy and B. N. Dev, in International Conference on Physics of Emerging Functional Materials (PEFM-2010), AIP Conference Proceedings Vol. 1313 (2010) pp. 388-390

[10] Ion Beams: A Powerful Tool for Making New Functional Materials, B. N. Dev, in International Conference on Physics of Emerging Functional Materials (PEFM-2010), AIP Conference Proceedings Vol. 1313 (2010) pp. 70-73

[11] Quantum size effects in electronic and magnetic behaviour in epitaxial nanostructures,B. N. Dev, A. Roy, R. Batabyal, M. Suzuki, T. Koshikawa, T. Yasue, M. Hashimoto and K. Umezawa, In Proceedings of the 8th International Symposium on Atomic Level Characterizations for New Materials and Devices (ALC 11) (2011), pp. 382 – 384, Seoul, Republic of Korea, May 22- 27, 2011

[12] Tip-voltage induced modifications and real time growth observation of adlayer on ultrathin Ag nanoislands on Si(111)-(7x7) surfaces, R. Batabyal, J. C. Mahato, D. Das, A. Roy, A. S. Bhattacharyya and B. N. Dev, In Proceedings of the 8th International Symposium on Atomic Level Characterizations for New Materials and Devices (ALC 11) (2011), pp. 592 – 594, Seoul, Republic of Korea, May 22- 27, 2011

[13] XSW-XAFS characterization of ion-irradiated Pt/Ni/C multilayer, Nitya Ramanan, Debdutta Lahiri, Sumalay Roy, Surinder M Sharma and B N Dev, Journal of Physics: Conference Series 430 (2013) 012063

[14] Magnetic Studies of ion beam irradiated Co/CoO thin films, A.S. Bhattacharyya, D. Kabiraj, S.M. Yusuf and B.N. Dev, Physics Procedia 54, 87 (2014)

[15] Superconducting cobalt in nanoscale cobalt thin films, B. N. Dev, J. Nanomed Nanotechnol, Vol 9 (2018); DOI: 10.4172/2157-7439-C4-075 (open access)

[16] Quantum phenomena in nanostructures, B. N. Dev, J. Phys.: Conf. Ser. 1718 (2021) 012003

[17] Silicon nanodots via sputtering of Si(111)-7x7 surfaces and post-annealing, J.C. Mahato, D. Das, R. Batabyal, Anupam Roy, B.N. Dev, Materials Today: Proceedings 47 (2021) 1617

C. Proceedings of National Conferences (Since 2009)

[1] Epitaxial structures on single crystal surfaces, B. N. Dev, Solid State Physics, Vol. 54 (2009) pp. 33-36, Proceedings of the DAE Solid State Physics Symposium.

[2] Desorption of Ag from grain boundaries in Ag film on Br- and H-passivated Si(111) surfaces, Anupam Roy, B. Sundaravel, R. Batabyal, J. C. Mahato and B. N. Dev, AIP Conf. Proc. Vol. 1349 (2010) pp. 691-692, Proceedings of 55th DAE Solid State Physics Symposium (DAE-SSPS 2010) at Manipal University, Karnataka, India, Dec 26-30 (2010)

[3] Self-organized growth of cobalt nanostructures on Ag/Si(111)-(7×7) surfaces, R. Batabyal, J. C. Mahato, A. Roy and B. N. Dev, AIP Conf. Proc. Vol. 1349 (2010) pp. 741-742, Proceedings of 55th DAE Solid State Physics Symposium (DAE-SSPS 2010) at Manipal University, Karnataka, India, Dec 26-30 (2010)

[4] X-ray Standing Wave in a Multi-Trilayer System With Linearly Varying Period, Sumalay Roy and B. N. Dev, AIP Conf. Proc. Vo. 1349 (2010) pp. 737 – 738, Proceedings of 55th DAE Solid State Physics Symposium (DAE-SSPS 2010) at Manipal University, Karnataka, India, Dec 26-30 (2010)

[5] "Self-organized Growth of Cobalt Nanostructures on Ag/Si (111)-7×7 Surfaces", R. Batabyal, J. C. Mahato, A. Roy and B. N. Dev, AIP Conf. Proc. 1349, 741-742 (2011).

[6] Simultaneous growth of sub-nanometer deep vacancy island and epitaxial silicide islands on Si (111), J. C. Mahato, Debolina Das, R. Batabyal, and B. N. Dev, AIP Conf. Proc. 1512, 748 (2013)

[7] Early stage fractal growth in thin films below the percolation limit, R.Batabyal, J.C.Mahato, Debolina Das, and B. N. Dev , AIP Conf. Proc. 1512, 740 (2013)

[8] Manifestation of surface and interface properties of Ag overlayer on Si (111), A. H. M. Abdul Wasey, R. Batabyal, B. N. Dev, and G. P. Das , AIP Conf. Proc. 1512, 714 (2013)

[9] Growth of a-few-atom wide nanowires with different surface reconstructions via desorption of Au on vicinal Si (111) surfaces, Debolina Das, J. C. Mahato, R. Batabyal, Nasrin Banu, Bhaskar Bisi and B. N. Dev, AIP Conf. Proc. 1536, 377 (2014)

[10] Sign reversals of magnetoresistance in ion-irradiated Co/Cu multilayers at high fluences, Nasrin Banu, I. Das and B. N. Dev, AIP Conf. Proc. 1832, 080033 (2017)

[11] Recrystallization in Si upon ion irradiation at room temperature in Co/Si(111) thin film systems, Nasrin Banu, B. Satpati, and B. N. Dev, AIP Conf. Proc. 1942, 080063 (2018)

[12] Transition metal silicide nanowires on silicon: Epitaxial growth, self-organization and shape transition, B. N. Dev, J. C. Mahato and Debolina Das, The 64th DAE Solid State Physics Symposium, Jodhpur, 18 – 22 December 2019.

D. Books or Chapters in a Book:

1. ***Physics at Surfaces and Interfaces***, Edited by B. N. Dev (World Scientific, Singapore, 2003)

2. ***Nuclear Instruments and Methods in Physics Research, Section B, Vol. 212, 2003*** (North Holland, The Netherlands)**,** Edited by A. P. Pathak and B. N. Dev**,** Proceedings of the 20th International Conference on Atomic Collisions in Solids (ICACS20, January 19-24, 2003, Puri, India)

3. *RBS and Channeling Analysis of Self-Assembled Structures*, B. N. Dev, A chapter in the book Ion Beam Analysis of Surfaces and Interfaces of Condensed Matter Systems, (NOVA Science Publishers Inc., New York, 2003), Ed P. Chakraborty, pp.103- 135.

4. Novel growth of Ag islands on Si(111) surfaces by molecular beam epitaxy: Plateaus with atomic scale preferred heights, D. K. Goswami, K. Bhattacharjee and B. N. Dev, in Nanoscale Materials: From Science to Technology, Editors: S. N. Sahu, R. K. Choudhury and P. Jena , Nova Science Publishers Inc., New York, 2006

5. ***Nuclear Instruments and Methods in Physics Research, Section B Vol.266, 2008*** **(Elsevier)***,* Edited by A. P. Pathak, D. K. Avasthi and B. N. Dev**,** Proceedings of the 18th International Conference on Ion Beam Analysis (IBA2007, September 23-28, 2007, Hyderabad, India)

6. **Applied Surface Science**, **Vol. 256, No.2, 2009 (Elsevier),** Edited by B. N. Dev and P. V. Satyam Proceedings of the 2nd International Conference on Physics at Surfaces and Interfaces (Puri, India, 23-27 February 2009)

7. Defect induced magnetism in fullerines and MoS_2, Sinu Mathew, T. K. Chan, B. N. Dev, John TL Thong, M. B. H. Breese, T. Venkatesan, A chapter in the book *Low Power Semiconductor Devices and Processes for Emerging Applications in Communications, Computing, and Sensing,* S. Walia (Ed), (CRC Press, 2018) pp 79 – 93.

8. High-density nonmagnetic cobalt in cobalt thin films, B. N. Dev and Nasrin Banu, A chapter in the book *Recent Advances in Thin Film Research*, *Materials Horizons: From Nature to Nanomaterials*, Sushil Kumar and D. K. Aswal (Eds), (Springer Nature, 2020) pp. 103 – 130.

9. Strain Engineering to Improve the Thermoelectric Performance of 2D TMDCs, Saumen Chaudhuri, Amrita Bhattacharya, A. K. Das, G. P. Das and B. N. Dev, A chapter in the book *Low-Dimensional Materials, Systems, and Applications*, P. Chakraborty (Ed.) (Elsevier, in press)