Anand P Pathak

Education
M Sc 1967 Allahabad University, Ph D 1971 I I T Kanpur
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Department of Physics / University Guest house,
RGUKT/ IIIT Basar Campus , Basar Mandal,
Nirmal Dist, Telangana-504107.

Prof Anand Pathak joined the institute on 2nd July 2016.

Professional Recognitions

Fellow, The Institute of Physics (London): F. Inst. P., C. Phys.
Fellow, National Academy of Sciences, India: F N A Sc
Fellow, IBSI (Ion Beam Society of India)

Member, IOP (London) Fellowship Panel and C Phys Panel (Aug 2004 - todate)
Member, UGC Physics Panel (June 94 - 2002).
Member, International Committee, "Int.Conf. Atomic Collisions in Solids (ICACS)" AND "Int.Conf. Ion Beam Analysis (IBA)"; Also Founding IC member for conf series "Charged and Neutral Particle Channeling" and for " Radiation Effects in matter (REM)". All these are biennial International conference series.

Chairman, 20th Int. Conf. Atomic Collisions in Solids (ICACS20) PURI (INDIA) Jan 2003

Director, Workshop on "Ion Beam Studies of NanoMaterials: Synthesis, Modification and Analysis" held at ICTP Trieste Italy, June 2006

Chairman, 18th Int. Conf. Ion Beam Analysis (IBA 2007) Hyderabad, Sept 2007

Associate Editor : Radiation Effects and Defects in Solids
(published by Taylor and Francis UK)

Member, Editorial Board : Nuclear Instruments and Methods in Physics Research B : Beam Interactions with Materials & Atoms published by Elsevier Science Publishers, North Holland (2003-2010

Professional Experience

- **Teaching Experience:** 39 years at Central University Hyderabad and working as Professor of Physics at IIIT Basar (RGUKT) From July 2nd 2016 till date

- **Academic Research Experience:**

(i) Sept. 1971 to Aug. 1972 (Sr. Research Asst.) Physics. Department. IIT, Kanpur, India.

(ii) Aug. 1972 to Sept. 1974 (Research Fellow) Theoretical Physics Division, AERE., Harewell, UK

(iii) Oct. 1974 to Oct. 1976 (Collaborateur Etranger) S.E.S.I./C.E.N., Commissariat A L'Energie-Atomique, Fontenary-aux-Roses, France.

(iv) Nov. 1976 to July 1977 (Research Associate) Physics. Department., Roorkee University, (Now IIT Roorkee,) India.

(v) July 1977 - March 1979 Lecturer
March 1979 - June 1987 Reader
June 1987 - -Dec 2011 Professor
(Feb. 1992 - Feb. 1996, Dean, School of Physics)
Jan 2012- Nov 2012 UGC BSR Faculty Fellow
Dec 2012 to June 2016 CSIR Emeritus Scientist

School of Physics
University of Hyderabad
P.O. Central University
Hyderabad 500 046
India

Member Academic Council of University of Hyderabad June1987 till Dec 2011

Member Executive Council of University of Hyderabad from June 1992 to June 1995
and again from August 2008 to August 2011

July 2016 to date Professor at IIIT (RGUKT) Basar

Guest Scientist (at foreign institutions) : (after joining the University of Hyderabad in July 1977)

1) H.C. Orsted Institute, Copenhagen (Denmark) Summer 1979.
2) CSIRO, Division of Chemical Physics, Clayton (Australia) May 1981- Feb. 1982.
3) Max Planck Institut fur Metallforschung, Stuttgart (W. Germany).
   (i) Summer 83
   (ii) June 85 -Dec. 86(**Humboldt fellow**)
4) ICTP, Trieste (Italy)
   (i) Feb. - March 76 (ii) April - June 1984
   (iii) August 1985 (iv) April 1986
   (v) August 1991 (vi) July-August 1997
   (vii) Aug-Oct 1998 (viii) May 2001 and Aug 2001
   (ix) June –July 2004 (x) June-July 2006 **(Directed a Workshop)**
5) Universitat Freiburg, Germany March-July 1998 (**Humboldt Fellow**)
6) ForschungZentrum Rossendorf (Dresden) Germany
   Oct 2000; May-June 2001; May-Aug 2002; May –July 2003 (**Humboldt Fellow**)
7) Universidad Autonoma Metropolitana, Iztapalapa (Mexico City)
   Visiting ("Alonso Fernandez Gonzalez" **Chair) Professor in Physics**
   (Feb 2004 to Jan 2005 , one year Sabbatical Leave from Hyderabad)
8) University of Padova (Italy) April-May 2005 (Visiting Professor)
9) Frankfurt Institute for Advanced Study (FIAS) Uni Frankfurt May-July 2006 (**Humboldt Fellow**), Nov-Dec 2007
10) Institute for Nuclear Studies and Institute for Electronic Materials Technology Warsaw, Poland: Nov- Dec 2006, April 2007 , Nov 2007 , August 2008

11) Spring MRS Meeting in SFO (9-13 April 2007) paper and session chair , Visit to MU Columbia for new collaborations on oxide materials.
12) Spring MRS Meeting in SFO (13-17 April 2009) Session Chair, Talk and two papers,
13)Visited NUS Singapore, 20-24 April 2009 for collaboration, in continuation to earlier visit in Nov-Dec 2008 and again in Feb 2011 to deliver invited talk during 4th ISJPS (India Singapore Joint Physics Symposium)
14) St. Petersburg Polytechnic University, Russia: Oct 2009, March 2010, July 2010 and Feb 2011
15) Institute of Nanotechnology (KIT) Karlsruhe, Germany May-July 2010 (**Humboldt Fellow)**
16) University of Saskatchewan (Canada) Jan 2012 ISTP- GITA(DST) workshop on Energy Materials
17) Frankfurt Institute for Advanced Study (FIAS) Uni Frankfurt , Jan –March2014 (**Humboldt Fellow**)
18) Hungarian Academy of Sciences Labs in Budapest and Debrecen 6-20 July 2014 (INSA-HAS Exchange)
19} Institute of Physics, London as Senior Fellow of Panel in June 2009, July 2013, June 2014, June 2015 and June 2016

Participated , presented papers (Invited and Contributed) and Chaired Sessions in International Conferences on Atomic Collisions in Solids, Ion Beam Analysis, Ion Beam Modifications of Materials in USA, Canada, Europe ,Japan and Australia AND International Accelerator Conference series(CAARI) in Denton and Fort Worth, USA. Delivered Lectures and Chaired Sessions in NATO Advanced Research Workshops. Visited several Research Institutions and delivered Colloquia in North America, Europe, Japan and Australia, in addition to INDIA.

Research Interests : Condensed Matter Physics, Atomic Collisions in Solids, Ion Solid Interactions, Ion Beam Studies of Nano-Materials.

I. Channeling; quantum and wave mechanical properties.
II. Energy losses and stopping powers; elastic and inelastic.
III. Electron correlations and related properties and electronic properties of point defects.
IV. Radiation damage; Effects of point defects and dislocations on channeling and slowing down of particles.
V. Channeling radiation, coherent bremsstrahlung and defect studies.
VI. Ion Beam Studies of Strains/Defects/Damage in semiconductor Heterostructures / superlattices and Nano-Materials: Synthesis, Modification and Characterization at nano-scale. Energy Bandgap Engineering

Total number of publications = 286 (200 (International Journals) + **64** (International and National Refereed Conference Proceedings) + **12** (Reviews) + **10** (Books, **2 +8**)

Ph D theses supervised…...Completed 12 Continuing 1. M Phil theses completed 10

LIST OF PUBLICATIONS

INTERNATIONAL JOURNALS

1. Screening of a fixed charge in Electron Liquid, Phys. Rev. B2, 3021 (1970).
2. Anomalous Transmission of Particles through Perfect Crystals (with M. Yussouff), Phys. Rev. B2, 4723 (1970).
3. Emission of Charged Particles from Crystals (with M.Yussouff), Phys. Rev. B3, 3702 (1971)

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4. Screening of a Fixed Charge in Metals, Phys. Stat. Sol. 43, 551 (1971).
5. Screening of a Fixed Charge in Modified Hubbard Approximation, Phys. Stat. Sol. 46, 83 (1971).
6. Charged Particle Energy Loss to Electron Gas (with M. Yussouff), Phys. Stat. Sol 49, 431 (1972).
7. Channeling of Charged Particles in Perfect Crystals (with M Yussouff) Rad. Eff.16, 1 (1972).

8. Quantum Calculation of Emission of Charged Particles from Crystals, Phys. Rev. B7, 4813 (1973).

9. Phonon Absorption Effects in Directional Emission of Charged Particles from crystals, Phys. Rev. B9, 2406 (1974)

10. Momentum Transfer Cross Sections and the Z Oscillations in Stopping Power (with J S Briggs) J. Phys. C (Sol. Stat. Phys.) 6 L153 (1973).

11. The Z Oscillations in Electronic Stopping Power (with J.S. Briggs), Atomic Collisions in Solids, eds. S. Datz, B.R. Appleton and C.D. Moak (Plenum N.Y. 1975) pp.15.

12. Emission of Electrons and Positrons from Crystals -Directional Effects, Atomic Collisions in Solids, eds. S. Datz, B.R. Appleton and C.D. Moak (Plenum N.Y. 1975) pp. 531.

13. The Stopping power of Solids for Low Velocity Channeled Heavy ions, (with J S Briggs) J. Phys. C (Sol. Stat. Phys.) 7, 1929 (1974).

14. The Z Oscillations in Stopping Power of Metals for Low Velocity Channeled Heavy Ions. J.Phys. F (Metal Physics) 4, 1883 (1974).

15. Z -Dependence of Electronic Stopping Power of Low Velocity Channeled Heavy Ions. J. Phys. C (Sol. Stat. Phys.) 7, 3239 (1974).

16. Energy Loss of Low Velocity Heavy Ions in Planar Channeling, J. Phys. C (Sol. Stat. Phys.) 8, L341 (1975).

17. Stopping Power of Energetic Light Ions in Planar Channeling, Phys. Stat. Sol.(b) 71, K35 (1975).

18. The Ground State of Two Hole Centres in Oxides (with A.M. Stoneham and R.H. Bartram), J. Phys. C (Sol. Stat. Phys.) 9, 73 (1976).

19. Interatomic Potential and Energy Loss in Planar Channeling, J. Phys. C (Sol. Stat. Phys.) 8, L439 (1975).

20. Energy Loss of MeV alpha-Particles in Palladium-Hydrogen Systems in Planar Channeling, Phys. Rev. B13, 461 (1976).
21. Effects of Dislocations on the Energy Loss of Channeled Particles, Phys. Lett. 55A, 104 (1975).

22. Energy loss of alpha-Particles Channeled in Metal-Hydrogen Systems, Nucl. Inst. Meth. 132, 125 (1976).

23. Motion of Charged Particles in Curved Planar Channels - Effects of Dislocations, Phys. Rev. B13, 4688 (1976).

24. Effects of Dislocations on the Energy Loss of Charged Particles in Hyperchanneling, Phys. Lett. 57A, 467 (1976).

25. Interatomic Potential and Channeling, Rad. Effects 30, 193 (1976).

26. Electronic Structure of the V-centre in MgO, (with M.J. Norgett and A.M. Stoneham).Phys. C10, 555 (1977)

27. Motion of Charged Particles in Curved Axial Channels - Effects of Dislocations, Phys. Rev. B15, 3309 (1977).

28. Stopping Power of Solids in Planar Channeling, Phys. Stat. Sol.(b) 86, 751 (1978).

29. Channeling and a Semistatistical Model for Interatomic Potential, (with M P Srivastava) Phys. Stat. Sol. (b) 90, 703 (1978) .

30. Interatomic Potential for Atomic Collisions in Real Solids, Rad. Eff. Letters 43, 55 (1979).

31. Simplicity Considerations in Interatomic Potential for Channeling Calculations, Phys. Stat. Sol. (b) 93, K181 (1979).

32. Velocity dependence of Z Oscillations in Stopping Power of Solids for Channeled Heavy Ions, Nucl. Inst. Meth. 170, 209 (1980).

33. Systematic Study of Channeling Stopping Power Oscillations for Low Velocity Heavy Ions Phys. Rev. B22, 96 (1980).

34. Systematic Study of Channeling Stopping Power Oscillations for Low Velocity Heavy Ions II Phys. Rev. B22, 5544 (1980).

35. Energy Loss Spectra in Planar Channeling (with S. Steenstrup), Rad. Effects 55, 17 (1981).

36. Radiation from Relativistic, Positrons Channeled in Single Crystals (with B. Rath), Rad. Effects 63, 227 (1982).

37. Z-Oscillations in Channeling Stopping Power, Nucl. Inst. Meth. 194, 31 (1982).

38. Radiation from Planar Channeled Electrons at High Energies (with B. Rath) Nucl. Inst. Meth. 194, 251 (1982).

39. Superposition criteria in Continuum Potentials for Channeling (with L.T. Chadderton), Phys. Stat. Sol.(b) 110, K97 (1982).

40. Superposition Criteria in charge densities and potentials, Phys. Stat. Sol.(b) 114, K177 (1982).

41. Position Dependence of Channeling Stopping Power, Phys. Stat. Sol.(b) 122, 171 (1984).

42. Channeling Radiation from Relativistic electrons and positrons, Phys. Rev. B31, 1633 (1985).

43. Channeling of Charged Particles in Solids (with P.K.J. Balagari) Indian J. Phys. 60, 237 (1986).

44. Effects of Defects on Channeling Radiation (with P.K.J. Balagari), Phys. Stat. Sol.(b). 134, 115 (1986).

45. Channeling Radiation from strained Layer Superlattics (with P.K.J. Balagari) App. Phys. Letters 48, 1075 (1986).

46. Effects of Dislocations on Axial Channeling Radiation from positrons (with P.K.J. Balagari) J. Appl. Phys. 60, 955 (1986).

47. The Effects of Superlattice structure on Channeling Radiation from positrons (with P.K.J. Balagari) Radiation Effects, 100, 105 (1986).

48. Pion Diffusion Studies using muon Channeling at High Temperatures (with A.Seeger, K. Maier and Others) NATO Advanced Research Workshop on Relativistic Channeling. 31 March -April, 86, Maratea (Italy) eds. R.A. Carrigan and J.A... Ellison (Plenum 1987) p.479.

49. Crystal Potentials from Channeling Radiation - A First Principle calculation (with S. Satpathy) in NATO Workshop (as in no.48 above) p.455.

50. Progress in Pion decay Channeling; Refractory Bcc metals at high and low temperatures (with A. Seeger, K. Maier and others) Hyperfine Interactions 31, 229 (1986).

51. Possibility to use Channeling Radiation to study the strained layer superlattics (with P.K.J. Balagari) Proc. 18th Int. Conf. Phys. Semiconductors, Stockholm (Sweden) Aug. 11-15, 1986 (ed. O. Emngstrom) World Scientific Publishing Co., Singapore, 1987 p. 1863.

52. A model potential calculation for positron axial channeling from dislocation affected crystals (with P.K.J. Balagari) , Physica Status Solidi (b) 141, K15 (1987)

53. Response to comment on channeling Radiation from strained layer superlattices (with P.K.J. Balagari) Appl. Phys. Lett. 50, 699 (1987).

54. Study of Crystal Defects using ion channeling and channeling radiation, Bull. Material Science 10, 105 (1988).

55. Channeling Radiation from relativistic electrons and positrons in C, Si, Ge- Results of a local density calculation (with S. Satpathy) Nucl. Inst. Meth. B33, 39 (1988).

56. Study of Semiconductor Superlattices using energetic charged particles, Indian J. Phys. 63A, 248 (1989).

57. Effects of Dislocations on Ion Beam Channeling (with P.K.J. Balagari) Indian J. Phys. 63A, 487 (1989).

58. Planar Channeling of Electrons and Positrons in Crystals: Local Density Calculation of Planar Averaged Potential and Channeling Radiation Spectrum (with S. Satpathy) Phys. Stat. Sol.(b) 153, 455 (1989).

59. Planar Channeling of electrons and positrons in crystals: Local Density calculation of continuum potential and channeling radiation spectrum (with S. Satpathy) Nucl. Inst. Meth. B48, 248 (1990).

60. Axial channeling radiation from MeV electrons in various crystal targets (with P.K.J. Balagari) Nucl. Inst. Meth. B48, 252 (1990).

61. Position dependent stopping power for Axially channeled 10 to 160 MeV Alpha Particles in Silicon(with R. Agnihotri), Nucl. Inst. Meth. B67, 39 (1992).

62. Dechanneling cross section of alpha-particles by Interstitial atoms in Palladium (with Z. Chylinski, A. Dunlop and J. Mory) Nucl. Inst. Meth. B71, 255 (1992).

63. Shell structure potential for channeling in Solids (with V. Harikumar) Phys. Stat. Sol.(b) 177, 269 (1993).

64. Z_1 Oscillation in Stopping power of Silicon and Tungsten for low velocity Channeled heavy ions (with V. Harikumar) J. Phys. Condensed Matter 5, 3163 (1993).

65. Effects of Defects and Disorder on Channeling Radiation (with V. Harikumar) in Ordering Disorder : Prospect and Retrospect in Condensed Matter Physics, (eds).V Srivastava, A K Bhatnagar and Naugle (AIP Conf. Series No.286) 193 p. 255.

66. Planar Channeling Radiation from electrons and positrons in Silicon (with V. Harikumar) Phys. Stat. Sol.(b) 182, 51 (1994).

67. Electronic Stopping Power measurements using secondary ion beams (with N. Nath, O.P. Dahaniwal, A. Bhagwat, D.K. Awasthi and V. Harikumar) in Surface and Coating Technology (ed. G. Dearnaley 1994). 66, 231 (1994).

68. Stopping Power of Mylar and Carbon (with V. Harikumar, N. Nath S.K. Sharma, A. Bhagwat and D.K. Awasthi) Rad. Effects and Defects in Solids 132, 211 (1994).

69. Double Screening problem in Dechanneling by point Defects (with A.M. Siddiqui and V. Harikumar) Phys. Stat. Sol.(b) 185, 77 (1994).

70. Charged Particle Probes to Semiconductor superlattices (with V. Harikumar) Nucl. Inst. Methods B 99, 499 (1995).

71. Study of Catastrophic Dechanneling Resonance in Strained Layer Superlattices using Shell Structure Potential (with V. Harikumar) J. Phys. Cond. Matter 7, 7805 (1995).

72. Energy Loss of MeV Heavy ions in Carbon (with V. Harikumar, S.K. Sharma, Shyamkumar, N. Nath, D. Kabiraj and D.K. Avasthi) Nucl. Inst. Meth. B108, 223 (1996).

73. Stopping power of Carbon for heavy ions up to Copper (with Shyam Kumar, S.K. Sharma, N. Nath, V. Harikumar, D. Kabiraj and D.K. Avasthi) Rad. Effects and Defects in Solids 139, 197 (1996)

74. Scattering of pions and channeled muons by impurities in single crystals (with A.M. Siddiqui, V. Harikumar and L.N.S. Prakash Goteti) Mod. Phys. Lett B10, 745,(1996)

75. Ion Channeling Studies in In(x)Ga(1-x)/Ga As (with V Harikumar and A M Siddiqui) Solid State Phenomena (Scitec publication, Switzerland) 55 ,86 (1997)

76. The effects of stacking faults on Dechanneling - A Quantum Mechanical Calculation (with L.N.S. Prakash Goteti) J Phys (Cond Matter) 9,1709,(1997)

77. Stopping Power of Carbon for Si, Fe, Ni and Cu ions using ERDA Technique (with Shyam Kumar, S.K. Sharma, N. Nath, V. Harikumar, D. Kabiraj and D.K. Avasthi) Nucl Inst Meth B 129, 143 (1997).

78. MeV Heavy ion Stopping Power Measurements using N S C Pelletron (with Shyam Kumar, S.K. Sharma, N. Nath, V. Harikumar, S. K. Hui, D. Kabiraj and D. K. Awasthi) Vacuum 48, 1027 (1997)

79. Dechanneling by Ionized Point Defects in Solids - Double Screening Effects (with A M Siddiqui and A Kiran) Mod. Phys. Letters B 11, 1231 (1997)

80. Dechanneling by Dislocations - A Model Quantum Mechanical Calculation (with L N S Prakash Goteti) Phys. Rev. B 58, 5243 (1998)

81. Lattice Strain Measurements of Strained In(0.1) Ga(0.9) As/ Ga As Hetero-structures by RBS and Channeling(with A.M. Siddiqui, B. Sundaravel, A.K.Das, K.Sekar, B.N. Dev and B.M. Arora) Nucl Inst Meth B 142,387(1998)

82. Experimental Study of Stopping Power of MeV Heavy Ions (with A. Sharma S. Kumar, S.K. Sharma, N. Nath, V. Harikumar, L.N.S. Prakash Goteti S.K. Hui and D.K. Avasthi) J Phys. G 25, 135 (1999)

83. Dechanneling by Dislocations - A time Dependent Approach (with LNS Prakash Goteti) Phys. Rev. B 59, 8516 (1999)

84. Quantum Models for Dechanneling by Point Defects and Extended Defects (with LNS Prakash Goteti and AM Siddiqui) AIP Conference Proceedings 475,208 (1999) (Denton Accelerator Conference 1998)

85. Energy Loss of Heavy Ions in Solids at Energies below 5 MeV/n (with A Sharma and Shyam Kumar) AIP Conference Proceedings 475 , 765(1999) (Denton Accelerator Conference 1998)

86. Defects and Strain Studies in Semiconductor Multilayers (with SVS NageswaraRao and A M Siddiqui) Nucl Inst Methods B 161, 487 (2000)

87. Ion Channeling, High Resolution XRD and Raman Spectroscopy in Strained Quantum Wells (with AM Siddiqui and SVS Nageswara Rao etal.) J. Appl. Phys. 90, 2824 (2001)

88. Strain Measurements of Semiconductor Multilayers by Ion Channeling ,High Resolution XRD and Raman Spectroscopy (with SVS Nageswara Rao and AM Siddiqui) AIP Conference Proceedings 576, 476 (2001) (Denton Accelerator Conference . 2000)

89. Ion Beam Studies in Strained Layer Superlattices (with AM Siddiqui, GBVS Lakshmi etal) Nucl. Inst. Methods B 193, 319 (2002)

90. Channeling Radiation from Relativistic Electrons - Study of Stacking Faults and Dislocations (with LNS Prakash Goteti, and SVS Nageswara Rao) Nucl. Inst Methods B 193, 188 (2002)

91. Channeling Radiation from Relativistic Electrons and Positrons (with SVS Nageswar Rao and LNS Prakash Goteti) Ind J Phys. 76B, 443 (2002)

92. Quantum Description for the Effects of Strained Layer Superlattices on Channeling Radiation (with SVS Nageswara Rao and LNS Prakash) Nucl. Inst Methods B 202,312(2003)

93. Ion Beam Induced Modification of Lattice Strains in $In_{0.1}Ga_{0.9}As$/ Ga As system (with SVS Nageswara Rao etal) Nucl Inst Methods B 212, 473 (2003)

94. Ion Beam Characterization and Engineering of Strain in Semiconductor Multilayers (with SVS Nageswara Rao etal) Nucl Inst Methods B 212, 442 (2003)

95. Development of a Large Area two dimensional Position Sensitive ΔE-E Detector Telescope for Material Analysis (with SVS Nageswara Rao etal) Nucl Inst Methods B 212, 545 (2003)

96. Ion Beam Studies of Strains/Defects in Semiconductor Multilayers (with SVS Nageswar Rao etal) AIP Conf Proc 680, 593 (2003)

97. Automation of Channeling Experiment for Lattice Strain Measurements Using High Energy Ion Beams (with SVS Nageswara Rao etal) AIP Conference Proc. 680, 94 (2003)

98. Inelastic cross-sections of energetic protons in liquid water calculated by model dielectric functions and optical data (with D. Emfietzoglou and M. Moscovitch) Nucl Inst Methods B 212, 101 (2003)

99. Dechanneling of Electrons by Stacking faults- A model Quantum Mechanical Calculation (with S Dhamodaran etal) Nucl Inst Methods B 230, 100 (2005)

100. A Monte-Carlo Study of Sub-keV Electron Transport in Water- The Influence of Condensed Phase (with D Emfietzoglou etal) Nucl Inst Methods B 228, 341 (2005)

101. Modelling the Energy and Momentum Dependent Loss-Function of the valence shells of Liquid Water (with D. Emfietzoglou and M. Moscovitch) Nucl Inst Methods B 230, 77 (2005)

102. Pressure Dependence of the Mean Excitation Energy of Atomic Systems (with S Cruz and J Soullard) Nucl Inst Methods B 230, 46 (2005)

103. Pressure Effects on Stopping Power of Solids for Channeled Ions (with S Cruz and J Soullard) Rad Eff and Defects in Solids 160, 1 (2005)

104. A Monte-Carlo Code for the Detailed Simulation of Electron and Light Ion Tracks in Condensed Matter (with D Emfietzoglou etal) Radiation Protection Dosimetry, 119, 491 (2006)

105. A study of Electronic Stopping of Protons in Soft Biological Matter (with D Emfietzoglou etal) Nucl Inst Methods B **242,** 55 (2006)

106. Ion Beam Irradiation and Characterization of GaAs based Heterostructures (with S Dhamodaran etal) Nucl Inst Methods B **242**, 538 (2006)

107. RBS / Channeling Studies of Swift Heavy Ion Irradiated In Ga As / Ga As Heterostruictures (with S Dhamodaran et al) Nucl Inst Methods B **244**, 174 (2006)

108. Ion Beam Analysis of Defects and Strain in Swift Heavy Ion Irradiated In Ga As /Ga As Heterostructures (with S Dhamodaran et al) Nucl Inst Methods B **254**, 283(2007)

109. Electronic Stopping cross Sections for Proton Transport in Liquid Water Based on Optical Data Models (with D. Emfietzoglou et al) Nucl Inst Methods B **249**, 26 (2006)

110. Proton Beam Profiling in soft Biological Matter by Detailed Monte Carlo Simulation, (with D. Emfietzoglou et al) Nucl Inst Methods B **249**, 670 (2006)

111. Monte Carlo Calculation of Nanoscale dosimetric distributions of MeV proton tracks with secondary electron transport.(with D Emfietzoglou et al) Nucl Inst Methods B **245**, 80 (2006)

112. Raman and AFM Studies of Swift Heavy Ion Irradiated InGaAs/GaAs Heterostructures (with S Dhamodaran etal) J Phys Condensed Matter **18**, 4135 (2006)

113. High Resolution XRD Analysis of Swift Heavy Ion Irradiated InGaAs/GaAs Heterostructures (with S Dhamodaran etal) Nucl Inst Methods B **256**, 260 (2007)

114. Effects of hypersonic field and anharmonic interactions on channeling radiation (with Juby George et al) J Phys Condensed Matter **19**, 116210 (2007)

115. A comparative study of dielectric response function models for liquid water (with D Emfietzoglou and H Nikjoo) Radiation Protection Dosimetry **122**, 61 (2006)

116. A Monte Carlo Study of Energy Deposition by Heavy Charged Particles in Sub Cellular Volumes (with D. Emfietzoglou et al) Radiation Protection Dosimetry **126**, 457 (2007)

117. The electronic stopping power of liquid water for protons down to the Bragg peak (with D Emfietzoglou and H Nikjoo) Radiation Protection Dosimetry **126**, 97 (2007)

118. A Monte Carlo study of Energy Deposition at the Sub-cellular Level for Application to Targeted Radionuclide Therapy with Low Energy Electron Emitters (with D. Emfietzoglou et al) Nucl Inst Methods B **256**, 547 (2007)

119. A Consistent Dielectric Response Model for Water Ice over the whole Energy-Momentum Plane (with D Emfietzoglou and H Nikjoo) Nucl Inst Methods B **256** , 141 (2007)

120. HRXRD, AFM & Optical Study of Damage Created by Swift Heavy Ion Irradiation in GaN Epitaxial Layers (with N Sathish etal) Nucl Inst Methods B **256**, 281 (2007)

121. Quantum Calculations for the effects of dislocations on Channeling and Channeling Radiation (with Juby George) Nucl Inst Methods B **256**, 148 (2007)

122. Energetic Cluster Irradiation of InP (with S Dhamodaran et al) Nucl Inst Methods B **256,** 229 (2007)

123. Low and High Energy Irradiation of InGaAs/GaAs Heterostructures – A Comparison (with S Dhamodaran et al) Rad Effects Defects in Solids **162** , 215 (2007)

124. Surface Modification of InGaAs/GaAs Heterostructures by Swift Heavy Ion Irradiation (with S Dhamodaran etal) Nucl Inst Methods B **257**, 301 (2007)

125. A comparison of Secondary Electron Spectra from Proton Impact Ionization on Water in the Liquid and Solid phases (with D. Emfietzoglou et al) Nucl Inst Methods B **257**, 609 (2007)

126. Swift heavy ion irradiated InGaAs/InP multi quantum wells: Band-structure, interface and surface modifications (with S Dhamodaran etal) Nucl Inst Methods B **266**, 583 (2008)

127. Influence of activation of Si^{29+} ion-implantation in GaAs on ohmic contact resistance andelectrical performances of MESFETSs (with G Sai Sarvanan et al) Rad Effects & Defects in nSolids **163,** 737 (2008)

128. Structural studies of Ge nanocrystals embedded in SiO2 matrix (with N Srinivasa Rao etal) Nucl Inst Methods B **264**, 249 (2007)

129. Electron ionization cross section calculations for liquid water at high impact energies (with D. Emfietzoglou et al) Nucl Inst Methods B **266**, 1185 (2008)

130. Semi-empirical dielectric descriptions of the Bethe surface of the valence bands of condensed water (with D. Emfietzoglou et al) Nucl Inst Methods B **266,** 1154 (2008)

131. Ion beam modification studies of InP based multi quantum wells (with S Dhamodaran et al) Nucl Inst Methods B **266,** 1810 (2008)

132. Structural and Compositional Analysis of Strain Relaxed InGaAs/InP Multi Quantum Wells (with S Dhamodaran etal) Nuclear Inst Methods B **266**, 1908 (2008)

133. Ohmic contacts to pseudomorphic HEMTs with low contact resistance due to enhanced Ge penetration through AlGaAs layers (with G Sai Sarvanan etal) Semiconductor Science and Technology **23** 025019 (2008)

134. Ion beam modification of strained InGaAs/InP characterized by HRXRD, PL and AFM (with G Devaraju etal) Nucl Inst Methods B **266**, 3552 (2008)

135. Subcellular S-values for low energy electrons: A comparison of Monte Carlo simulations and continuous slowing down calculations (with D. Emfietzoglou et al) International Journal of Radiation Biology **84**, 1034 (2008)

136. Electron inelastic mean free paths in biological matter based on dielectric theory and many-body local-field corrections (with D. Emfietzoglou et al) Nucl Inst Methods B **267**, 45 (2009)

137. The effects of energy-loss straggling and elastic-scattering models on Monte Carlo calculations of dose distribution functions for 10 keV to 1 MeV incident electrons in water **(** with D. Emfietzoglou et al) Nucl Inst Methods B **267,** 1725 (2009)

138. RBS/Channeling and HRXRD studies on swift heavy ion irradiated GaN layers (with N Sathish etal) (CAARI 2008) AIP Conference Proceedings 1099, 385 (2009)

139. Investigation of strain in AlGaN/GaN Multi Quantum Wells by complementary techniques (with G Devaraju etal), (CAARI 2008) AIP Conference Proceedings 1099, 353 (2009)

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190. Laser ablation of natural micas and synthesis of MgO and Mg(OH)2 nanoparticles and nano-chains (with V S Vendamani, Archana Tiwari etal) Materials Letters (in Press)

191. Green synthesis of silver nanoparticle{reduced graphene oxide using Psidium guajava and its application in SERS for the detection of methylene blue (with Prajwal Chettri, VS Vendamani and Archana Tiwari etal) Appl Surface Science (in press)

192. Energetic ion induced desorption of hydrogen from porous silicon studied by on-line elastic recoil detection analysis (with V S Vendamani etal) Microporous and Mesoporous Materials (in press)

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4. Channeling Radiations from Relativistic Particles - Possibilities in Defect Studies (with L.T. Chadderton and B. Rath), Second Applied Physics Conference RMIT - Melbourne (30 Nov - 4 Dec. 1981).

5. Channeling Radiation and Application to defects in Solids, presented at the International Symposium on the Nuclear Accelerator impact in the interdisciplinary field, Laboratori Nazionali di Legnaro (Padova, Italy) 30 May - 1 June 1984.

6. Ion Implantation and Channeling with MeV Ions (Invited Talk) IPA Seminar on Research with Low Energy Accelerators, Institute of Physics, Bhubaneswar (28th Nov. 1 Dec. 1984).

7. Channeling Stopping Power in Planar Channeling (with P.K.J. Balagari) contributed paper at IPA Seminar on Research with Low Energy Accelerators, Bhubaneswar (28th Nov.- 1 Dec. 1984).

8. Channeling Radiation Applications in Defects in Solids (with P.K.J. Balagari) Proceedings of Silver Jubilee Workshop on Recent Advances in Theoretical Physics, IIT, Kanpur (India) 5-16 Dec. 1984, ed. R. Ramachandran (World Scientific, Singapore, 1985) p.398.

9. Channeling Radiation-Possibilities in Laser Physics (Invited Review Talk) Proc. Fifth National Workshop on Atomic and Molecular Physics, TIFR-Bombay (17th Dec. - 21 Dec. 1984).

10. Channeling of Charged Particles in Solids, Invited Paper at National Seminar on Solid State Physics (Golden Jubilee, Indian Physical Society) at I.A.C.S. Calcutta (14 - 17 Feb. 1985).

11. Ion Implantation and Defect Studies in Semiconductors (Invited Talk) International Conf. on Physics and Technology of compensated semiconductors, IIT-Madras (20-22 Feb. 1985).

12. Effects of Defects on Channeling Radiation (with P.K.J. Balagari) Seventh International Conference on Ion Beam Analysis, 7-12 July 1985 Berlin (W. Germany).

13. Charged Particle Interaction with Crystalline Solids-Defect Studies (Invited Talk in National Workshop on Modification of Materials - Bombay University (25-26 Feb. 1988).

14. Study of Dislocations using energetic ion beams (with P.K.J. Balagari) contributed paper in the National Workshop on modification of materials - Bombay University (25-26 Feb. 1988).

15. Study of Defects and Strained Layer Superlattices using Energetic charged particles. Invited Talk at 76th Session of Indian Science Congress at Madurai Kamaraj University (7-12 Jan. 1989).

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19. Shell potential and charge densities for channeling in silicon (with V. Harikumar and R. Agnihotri) Proc. of DAE Symposium on Solid State Physics B.H.U. Varanasi (Dec. 1991). Vol. 34C, p. 157.

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21. Channeling of Energetic Charged Particles in Semiconductor Superlattices (Invited Talk at 2nd International Conference on Semiconductor Materials, 1992, University of Delhi (South Campus) 14-19 Dec. 1992.)

22. Shell Structure Potential for Channeling in Semiconductors (with V. Harikumar) (contributed paper at 2nd International Conference on Semiconductor materials, University of Delhi (South Campus) 14-19 Dec. 1992).

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25. Study of Defects and Strains in Strained Layer Superlattices using channeling radiation (with V. Harikumar) Proc. DAE Symposium on Solid State Physics (BARC, Bombay Dec. 1993) Vol. 36C, p.265.

26. The strategy for high quality Research-Accountability and optimum use of funds and facilities: Invited Talk at Ninth Annual Convention of Indian Association of Physics Teachers held at GND University, Amritsar (19-22 Dec. 94).

27. Strained Layer superlattices studies using Shell structure potential (with V. Harikumar) Proc. DAE symposium on Solid State Physics (University of Rajasthan, Jaipur, Dec. 1994) Vol. 37C, 185 (1994).

28. Stopping Powers of Ti, Fe, Cu, Ions (Energy Range 0.2-1.0 MeV/u) in Carbon (with S.K. Sharma, Shyam Kumar, N. Nath, V. Harikumar and D.K. Avasthi) Proc. DAE Symposium on Nuclear Physics (IoP Bhubaneswar, Dec. 1994) Vol. 37B, 509 (1994).

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30. Stopping Powers of Sc, Cr and Mn ions in Carbon (with Shyam Kumar, S.K. Sharma, N. Nath, V. Harikumar, D. Kabiraj and D. K. Avasthi) Proc. DAE International Conference on Nuclear Physics (ICNP-95) Dec 1995.

31. Prospects of Using Shell Model Charged Density as a substitute for Hartree Fock Density in Materials Properties studies (with V Harikumar) DAE Symposium on Solid State Physics (BARC Bombay, Dec 1996) Vol 39C, 56,, (1996).

32. A Quantum Model for the effects of Dislocations in Axial Channeling (with LNS Prakash Goteti) Proc DAE symposium on Solid State Physics (BARC Bombay, Dec 1996) Vol 39C, 193 (1996).

33. Quantum Description of Electron Dechanneling by stacking Faults (with LNS Prakash Goteti and SVS Nageswara Rao) Proc DAE symposium on Solid State Physics (Bilaspur Dec 2000) Vol 43, 322 (2000).

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45. Analysis of Defects in Heterostructures by RBS/Channeling (S Dhamodaran et al) DAE Solid State Physics Symposium Solid State Physics **51 ,** 777 (2006)

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48. Reliability Studies of Au Ge/ Ni/Au Ohmic Contacts to MESFETs by accelerated Thermal Aging Tests (with G Sai Sarvanan etal) IWPSD 2007 (IIT Mumbai) p 46

49. Dechanneling of Positrons by Dislocations (with Juby George) in **Charged and Neutral Particles Channeling Phenomena,** Eds. S.B. Dabagov, and L. Palumbo ("Channeling 2008" - Erice, Italy 25 October – 1 November 2008), Proceedings of the 51st Workshop of the INFN ELOISATRON Project, Series Editor: A. Zichichi, World Scientific Publishing, 2009. And in the journal **Intern. Journal of Modern Physics A 2009**

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57. Synthesis and Irradiation Effects on Ultra small Silicon nanoparticles by Femtosecond Laser ablation of nanocrystalline porous silicon (with VS Vendamani etal) DAE BRNS-7th National Symposium on PLD 14-16 Nov 2013 IIT Kharagapur

58. Femtosecond ablation of Silicon in acetone: Tunable photoluminescence from generated nanoparticles and fabrication of surface nanostructures (with S Hamad, VS Vendamani etal) DAE-BRNS National Laser Symposium 22 , Manipal University Jan 8-11 , 2014

59. Excited state dynamics of silicon nanocrystals fabricated using ultrafast laser ablation in liquids (with S Hamad etal) 12th International Conference on Fiber Optics and Photonics, OSA Technical Digest (online) (Optical Society of America, 2014), paper T3A.48. (ISBN: 978-1-55752-882-7)

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62. Effects of Growth Rate on Crystallization of HfO_2 Thin Films Deposited by RF Magnetron Sputtering (with M. Dhanunjaya etal) Proceedings of 60th DAE SSP symposium at Amity University Noida Dec 2015. AIP Conf. Proc. **1731**, 080071 (2016); http://dx.doi.org/10.1063/1.4947949

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2. Atomic Collisions in Crystalline Solids, Atomic and Molecular Physics, (Proc. Third National Workshop Invited Talk) ed. M.K. Srivastava (Sarita Prakashan, Delhi, India, 1982) pp. 73-84.

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