Curriculum Vitae of Prof. Pallab Banerji

1	Name		Dr. Pallab Banerji		
2	Designation		Professor, Indian Institute of Technology (IIT), Kharagpur		
3	Specialization		Nanoscience & Technology, Electronic Materials & Devices for Energy & Optoelectronics, Energy Materials for Solar Photovoltaics & Thermoelectrics, Semiconductor Physics		
4	Address for communication	Postal Address	Materials Science Centre India Institute of Technology, Kharagpur 721302		
		E-mail:	pallab@matsc.iitkgp.ac.in; pallab_banerji@yahoo.com		
		Phone:	09434722493 (mobile)		
5	Date of Birth		1st January 1966		
6	Educational Qualifications:				
	Degree awarded		Year	University/Board	
	Ph. D.		1995	Jadavpur University	
7	Research Guidance	Ph. D. Supervision	14	Completed	
			06	On-going	
		M. Tech. Guidance	19	Completed	
8	Publications	In referred Journals	96 (List attached)		
		Publications in proceedings of seminars/conferences	33		
		Books and Monographs	02 (Chapters)		
9	Course taught	M. Tech. level	(i)	Science & Technology of Semiconductors	
			(ii)	Solar Energy Materials	
			(iii)	Techniques of Material Characterization	
			(iv)	Semiconductor Technology	
		B. Tech. level	(i)	Photonic Materials	
			(ii)	Electronic Materials	

Dr. Pallab Banerji: **List of publications in international journals**

96. A. Kumar, P. Dhama, D. S. Saini and **P. Banerji**, Effect of Zn substitution at a Cu site on the transport behavior and thermoelectric properties in Cu_3SbSe_4, **RSC Advances** 6, 5528 (2016).

95. K. Sarkar, Kalyan Jyoti Sarkar and **P. Banerji**, Synthesis of graphene oxide–silver nanocomposite with photochemically grown silver nanoparticles to use as a channel material in thin film field effect transistors, **RSC Advances** 5, 107811 (2015).

94. K. Sarkar, M. Palit, **P. Banerji**, S. Chattopadhyay, N. N. Halder, P. Biswas, B. Nagabhusana and S. Chowdhury, Silver catalyzed growth of $In_xGa_{1-x}As$ nanowires on Si (001) by metal–organic chemical vapor deposition, **CrystEngComm** 17, 8519 (2015).

93. S. Samanta, P. Banerji and P. Gangopadhyay, Effective Index Based Matrix Method for Silicon Waveguides in SOI Platform, **Optik** 126, 5488 (2015).

92. P. Biswas, P. Nath, D. Sanyal and **P. Banerji**, An alternative approach to investigate the origin of p-type conductivity in arsenic doped ZnO, **Current Applied Physics** 15, 1256 (2015).

91. S. Pati, **P. Banerji** and S. B. Majumder, Properties of indium doped nanocrystalline ZnO
thin films and their enhanced gas sensing performance, **RSC Advances 5**, 61230 (2015).

90. S. Kundu, M. Clavel, P. Biswas, B. Chen, H.-C. Song, P. Kumar, N. Halder, M. Hudait, **P. Banerji**, M. Sanghadasa and S. Priya, Lead-free epitaxial ferroelectric material integration on semiconducting (100) Nb-doped $SrTiO_3$ for low-power non-volatile memory and efficient ultraviolet ray detection, **Scientific Reports 5**, 12415 (2015).

89. Sk Masiul Islam, P. Biswas, **P. Banerji** and S. Chakraborty, InAs quantum dots as charge storing elements for applications in flash memory devices, **Materials Science & Engineering B** 198, 102 (2015).

88. S. Kundu, D. Maurya, M. Clavel, Y. Zhou, N. N. Halder, M. K. Hudait, **P. Banerji** and S. Priya, Integration of lead-free ferroelectric on HfO_2/Si (100) for high performance non-volatile memory applications, **Scientific Reports 5**, 8494 (2015).

87. P. Mukhopadhyay, R. Kumar, S. Ghosh, A. Chakraborty, A. Bag, S. Kabi, **P. Banerji** and D. Biswas, A novel growth strategy and characterization of fully relaxed un-tilted FCC GaAs on Si (100), **Journal of Crystal Growth** 418, 138 (2015).

86. Sk Masiul Islam and **P. Banerji**, Size effect of InAs quantum dots grown by metal organic chemical vapor deposition technique in storing electrical charges for memory applications, **RSC Advances 5**, 6906 (2015).

85. N. N. Halder, P. Biswas, **P. Banerji**, S. Kundu, B. Nagabhushan, K. Sarkar, S. Chowdhury and A. Chaudhuri, Photovoltaic conversion of visible spectrum by GaP capped InP quantum dots grown on Si (100) by metalorganic chemical vapor deposition, **Applied Physics Letters 106**, 012103 (2015).

84. N. N. Halder, P. Biswas, S. Kundu and **P.Banerji**, Au/p-Si Schottky junction solar cell: Effect of barrier height modification by InP quantum dots, **Solar Energy Materials & Solar Cells** 132, 230 (2015).

83. T. K. Das, S. K. Mandal, A. K. Panda, S. Bhattacharya, **P. Banerji** and A. Mitra, Giant magnetoimpedance (GMI) effect and field sensitivity of ferrofluid coated $Co_{66}Fe_2Si_{13}B_{15}Cr_4$ soft magnetic amorphous microwire, **Physics Procedia** 54, 16 (2014).

82. S. Pati and **P. Banerji**, Effect of temperature on the structural and morphological characteristics of ZnO thin films grown by MOCVD technique, **International Journal of Computer & Mathematical Sciences** 3, 76 (2014).

81. S. Mahaboob Jilani and **P. Banerji**, Graphene oxide - zinc oxide nanocomposite as channel layer for thin film transistors: effect of zinc oxide loading on field effect transport, **ACS Applied Materials & Interfaces**, 6, 16941 (2014).

80. S. Pati, **P. Banerji** and S.B. Majumder, n- to p- type carrier reversal in nanocrystalline indium doped ZnO thin film gas sensors, **International Journal of Hydrogen Energy 39**, 15134 (2014).

79. P. K. Rawat and **P. Banerji**, The effect of microstructure and metal-oxide barriers on carrier transport in top-down processed, low density nanograined n-type PbTe, **RSC Advances** 4, 29818 (2014).

78. Pankaj Kumar Rawat, B. Paul and **P. Banerji**, Exploration of Zn resonance levels and thermoelectric properties in iodine doped PbTe with ZnTe nanostructures, **ACS Applied Materials & Interfaces** 6, 3995 (2014).

77. Pranab Biswas, Nripendra N. Halder, Souvik Kundu, **P. Banerji**, T. Shripathi, and M. Gupta, Anomalous diffusion of Ga and As from semi-insulating GaAs substrate into MOCVD grown ZnO films as a function of annealing temperature and its effect on charge compensation, **AIP Advances** 4, 057108 (2014).

76. Nripendra N. Halder, Pranab Biswas, B. Nagabhushan, Souvik Kundu, D. Biswas, and **P. Banerji**, Effect of band offset on carrier transport and infrared detection in InP quantum dots/Si nano-heterojunction grown by metalorganic chemical vapor deposition technique, **Journal of Applied Physics** 115, 203719 (2014).

75. Aparabal Kumar, P.K. Rawat and **P. Banerji**, Carrier transport phenomenon and thermoelectric properties in melt-grown tellurium doped n-type $Bi_{0.88}Sb_{0.12}$ alloy, **Materials Science & Engineering B** 186, 112 (2014).

74. Sumati Pati, Arnab Maity, **P. Banerji** and S.B. Majumder , MOCVD grown ZnO thin film gas sensors: Influence of microstructure, **Sensors & Actuators: A. Physical** 213, 52 (2014).

73. Nripendra N. Halder, P. Biswas, T.D. Das, S.K. Das, S. Chattopadhyay, D. Biswas and **P. Banerji**, Effect of band alignment on photoluminescence and carrier escape from InP surface quantum dots grown by metalorganic chemical vapor deposition on Si, **Journal of Applied Physics**, 115, 043101 (2014).

72. Sumati Pati, Arnab Maity, **P. Banerji** and S.B. Majumder, Qualitative and quantitative discrimination of gases by ZnO thin film gas sensors using pattern recognition analysis, **Analyst** 139, 1796 (2014).

71. Sk Masiul Islam, **P. Banerji** and S. Banerjee, Electrical bistability, negative differential resistance and carrier transport in flexible organic memory device based on polymer bilayer structure, **Organic Electronics 15**, 144 (2014).

70. S. M. Islam, P. Biswas, **P. Banerji**, R. Mukherjee, Low temperature MOCVD growth of high density and defect free InAs quantum dots on (100) p-GaAs substrates for nonvolatile flash memory applications, **Journal of Nanoscience Letter** 4, 26 (2014).

69. Souvik Kundu, Sankara Rao Gollu, Ramakant Sharma, Nripendra Narayan Halder, Pranab Biswas, **P. Banerji**, D. Gupta, GaAs metal-oxide-semiconductor based nonvolatile memory devices embedded with ZnO quantum dots, **Journal of Applied Physics** 114, 084509 (2013).

68. Pankaj Kumar Rawat, Biplab Paul and **P. Banerji**, Impurity-band induced transport phenomenon and thermoelectric properties in Yb doped $PbTe_{1-x}I_x$, **Physical Chemistry Chemical Physics** 15, 16686 (2013).

67. S. Mahaboob Jilani, Tanesh D. Gamot, **P. Banerji**, S. Chakraborty, Studies on resistive switching characteristics of aluminum/graphene oxide/semiconductor nonvolatile memory cells, **Carbon** 64, 187 (2013).

66. P. K. Rawat, B. Paul and **P. Banerji**, Thermoelectric properties of $PbSe_{0.5}Te_{0.5}$: *x* (PbI_2) with endotaxial nanostructures: a promising n-type thermoelectric material, **Nanotechnology 24**, 215401 (2013).

65. Sumati Pati, A. Maity, **P. Banerji**, S. B. Majumder Temperature dependent donor-acceptor transition of ZnO thin film gas sensor during butane detection, **Sensors and Actuators B: Chemical 183**, 172 (2013).

64. S. Chowdhury, N.N. Halder and **P. Banerji**, Growth and characterization of MOCVD grown gallium phosphide nanostructures on silicon substrates, **Advanced Materials Research 716**, 281 (2013).

63. Pranab Biswas, Souvik Kundu, **P. Banerji**, S. Bhunia, Super rapid response of humidity sensor based on MOCVD grown ZnO nanotips array, **Sensors and Actuators B: Chemical 178**, 331(2013).

62. S. Adhikari and **P. Banerji**, Poly (aniline-co-m-aminobenzoic acid) deposited on poly (vinyl alcohol): Synthesis and characterization, **Bulletin of Materials Science** 36, 641 (2013).

61. Pranab Biswas, Souvik Kundu and **P. Banerji**, A study on electrical transport vis-à-vis the effect of thermal annealing on the p-type conductivity in arsenic-doped MOCVD grown ZnO in the temperature range 10–300 K, **Journal of Alloys and Compounds 552**, 304 (2013).

60. Souvik Kundu, Nripendra N. Halder, Pranab Biswas, D. Biswas, **P. Banerji**, Rabibrata Mukherjee, and S. Chakraborty, Charge storage properties of InP quantum dots in GaAs metal-oxide-semiconductor based nonvolatile flash memory devices, **Applied Physics Letters 101**, 212108 (2012).

59. Pankaj Kumar Rawat, Biplab Paul, and **P. Banerji,** An alternative approach for optimal carrier concentration towards ideal thermoelectric performance, **Physica Status Solidi – Rapid Research Letters 6**, 481 (2012).

58. Nripendra N. Halder, Souvik Kundu, Rabibrata Mukherjee, D. Biswas and **P. Banerji**, Catalyst-free direct growth of InP quantum dots on Si by MOCVD: a step toward monolithic integration, **Journal of Nanoparticle Research 14**, 1279 (2012).

57. S. Mahaboob Jilani, Tanesh D. Gamot, and **P. Banerji**, Thin-Film Transistors with a Graphene Oxide Nanocomposite Channel, **Langmuir 28**, 16485 (2012).

56. Souvik Kundu, Y. Anitha, S. Chakraborty and **P. Banerji**, Interface studies on high-k/GaAs MOS capacitors by deep level transient spectroscopy, **Journal of Vacuum Science and Technology B 30**, 051206 (2012).

55. Souvik Kundu, N.N. Halder, D. Biswas, **P. Banerji**, T. Shripathi and S. Chakraborty, Role of ultra thin pseudomorphic InP layer to improve the high-k dilectric/GaAs interface in realizing metal-oxide-semiconductor capacitor, **Journal of Applied Physics 112**, 034514 (2012).

54. Sumati Pati, S.B. Majumder and **P. Banerji**, Role of oxygen vacancy in optical and gas sensing characteristics of ZnO thin films, **Journal of Alloys and Compounds 541**, 376 (2012).

53. Souvik Kundu, Ajit Kumar, S. Banerjee and **P. Banerji**, Electrical properties and barrier modification of GaAs MIS Schottky device based on MEH-PPV organic interfacial layer, **Materials Science in Semiconductor Processing 15**, 386 (2012).

52. Shyambo Chatterjee, S. Banerjee and **P. Banerji**, New Polymer acceptor for solar cells application, **Synthetic Metals 162**, 566 (2012).

51. Souvik Kundu, T. Shripathi and **P. Banerji**, Interface engineering with an MOCVD grown ZnO interface passivation layer for ZrO_2 – GaAs metal – oxide – semiconductor devices, **Solid State Communications 151**, 1881 (2011).

50. Souvik Kundu, Sandip Kumar Roy, **P. Banerji**, GaAs metal-oxide-semiconductor device with titanium dioxide as dielectric layer: effect of oxide thickness on the device performance, **Journal of Physics D: Applied Physics 44,** 155104 (2011)**.**

49. Biplab Paul and **P. Banerji**, The effect of chromium impurity on the thermoelectric properties of PbTe in the temperature range 100 – 600 K, **Journal of Applied Physics 109**, 103710 (2011).

48. Biplab Paul, P.K. Rawat and **P. Banerji**, Dramatic enhancement of thermoelectric power factor in PbTe:Cr co-doped with iodine, **Applied Physics Letters 98**, 262101 (2011).

47. Suatnu Mangal, P. Ghelfi, A. Bogoni, and **P. Banarji**, Barrier height dependence of Fano factor and 1/f noise effect on InGaP based Schottky barrier diode, J**ournal of Applied Physics 110**, 033721 (2011).

46. Souvik Kundu, Sandipta Roy, S Chakraborti, T Shripathi and **P. Banerji**, Studies on Al/ZrO_2/GaAs Metal-oxide-semiconductor capacitors and determination of its electrical and dielectric properties in the frequency range 10 kHz to 1 MHz, J**ournal of Vacuum Science & Technology B 29**, 031203 (2011).

45. S. Adhikari, J. Singh, R. Banerjee and **P. Banerji**, Ester Sensing with Poly (Aniline-co-m-aminobenzoic Acid) Deposited on Poly (Vinyl Alcohol), **Sensors & Transducers Journal 125**, 177 (2011).

44. Shyambo Chatterjee, Susanta Banerjee and **P. Banerji**, Synthesis and characterization of fluorene based –conjugated ter-copolymers, **Synthetic Metals 161**, 263 (2011).

43. S. Adhikari, J. Singh, R. Banerjee and **P. Banerji**, Camphorsulfonic acid doped polyaniline for detection of terpenes released by plants after pest attack, **Sensor Letters** 9, 1807 (2011).

42. Shyambo Chatterjee, Susanta Banerjee and **P. Banerji**, Synthesis of Fluorene Based new Ter-Copolymers: Electrochemical and Optical Properties, **Journal of Macromolecular Science, Part A: Pure and Applied Chemistry** 48, 780 (2011).

41. S. Chatterjee, S.K. Sen, S. Maji, B. Dasgupta, **P. Banerji** and S. Banerjee, Benzotrifluoromethyl group-substituted poly(para-phenylenevinylene): effect on solubility, optical and electrical properties, **Journal of Applied Polymer Science 116**, 1603 (2010).

40. R. Sharma, B. Paul and **P. Banerji**, Current transport through InP/InSb heterojunction: effect of lattice mismatch, **Applied Surface Science 256**, 2232 (2010).

39. S. Majumdar and **P. Banerji**, Hopping conduction in nitrogen doped ZnO in the temperature range 10 – 300 K, **Journal of Applied Physics 107**, 063702 (2010).

38. S. Majumdar and **P. Banerji**, Temperature dependent hopping conduction in lithium-doped zinc oxide in the range 10-300 K, **Applied Physics A 100**, 487 (2010).

37. S. Adhikari and **P. Banerji**, Enhanced conductivity in iodine doped polyaniline thin film formed by thermal evaporation, **Thin Solid Films 518**, 5421 (2010).

36. P. Kumar, S. Adhikari and **P. Banerji**, Fabrication and characterization of polyaniline/porous silicon heterojunction, **Synthetic Metals 160**, 1507 (2010).

35. Biplab Paul, Ajay Kumar V and **P. Banerji**, Embedded Ag-rich nanodots in PbTe: Enhancement of thermoelectric properties through energy filtering of the carriers, **Journal of Applied Physics, 108,** 064322 (2010).

34. S. Majumdar and **P. Banerji**, Temperature dependent electrical transport in p-ZnO/n-Si heterojunction formed by pulsed laser deposition, **Journal of Applied Physics 105**, 043704 (2009).

33. S. Majumdar, S. Chattopadhyay and **P. Banerji**, Electrical Characterization of p-ZnO/p-Si heterojunction, **Applied Surface Science 255**, 6141 (2009).

32. Biplab Paul and **P. Banerji**, Optical and electrical properties of as-grown single crystalline PbTe, **Journal of Crystal Growth 311**,1260 (2009).

31. B. Paul and **P. Banerji**, Controlled synthesis of lead telluride nanocrystals, **Advanced Materials Research 67**, 251 (2009).

30. S. Majumdar and **P. Banerji**, Growth and characterization of urea doped p-type ZnO thin film grown by pulsed laser deposition, **Advanced Materials Research 67**, 127 (2009).

29. S. Majumdar and **P. Banerji**, Effect of Li incorporation on the structural and optical properties of ZnO, **Superlattices and Microstructures 45**, 583 (2009).

28. S. Mangal and **P. Banerji**, GaAs Schottky barrier diodes: the effects of temperature and carrier concentrations, **Journal of Applied Physics 105**, 083709 (2009).

27. S. Majumdar and **P. Banerji**, Moisture sensitivity of p-ZnO/n-Si heterostructure, **Sensors and Actuators B: Chemical 140**, 134 (2009).

26. S. Mangal, S. Adhikari and **P. Banerji**, Aluminium/polyaniline/GaAs metal-insulator-semiconductor solar cell: effect of tunneling on device performance, **Applied Physics Letters 94**, 223509 (2009).

25. B. Paul and **P. Banerji**, Grain structure induced thermoelectric properties in PbTe nanocomposites, **Nanoscience and Nanotechnology Letters 1**, 208 (2009).

24. S. Adhikari and **P. Banerji**, Polyaniline composite by in situ polymerization on a swollen PVA gel, **Synthetic Metals 159**, 2519 (2009).

23. J.K. Mishra, S. Bhunia, S. Banerjee and **P. Banerji**, Photoluminescence studies on porous silicon/polymer heterostructure, **Journal of Luminescence 128**, 1169 (2008).

22. **P. Banerji**, Microstructure characterization of porous silicon as studied by positron annihilation measurements at low temperatures and high vacuum, **Applied Surface Science 253**, 5129 (2007).

21. S. Bhunia, **P. Banerji**, T.K. Chaudhuri, A.R. Haldar, D.N. Bose, Y. Aparna, M.B. Chhetri and B.R. Chakraborty, Optimisation of growth of InGaAs/InP quantum wells using photoluminescence (PL) and secondary ion mass spectroscopy (SIMS), **Bulletin of Materials Science 23**, 207 (2000).

20. D. N. Bose, **P. Banerji**, S. Bhunia, Y. Aparna, M. B. Chetri and B. R. Chakraborty, Determination of well widths in a MOVPE grown InGaAs/InP multi-quantum well structure using SIMS and photoluminescence, **Applied Surface Science 158**, 16 (2000).

19. S. Chakrabarti, B. Das, **P. Banerji**, D. Banerjee and R. Bhattacharya, Bipolaron saturation in polypyrrole, **Physical Review B 60**, 7691 (1999).

18. D. V. Sridhara Rao, K. Muraleedharan, G. K. Dey, S. K. Halder, G. Bhagavannarayan, **P. Banerji**, D. Pal and D. N. Bose, Transmission electron microscopy and X-ray diffraction studies of quantum wells, **Bulletin of Materials Science 22**, 947 (1999).

17. G. S. Mahapatra, C. Haldar, **P. Banerji**, D. Banerjee and R. Bhattacharya, Study of temperature dependence in saccharide-based lyoluminescence, **Journal of Luminescence 78**, 1 (1998).

16. **P. Banerji**, C. Chakraborty and C. K. Sarkar, Longitudinal diffusivity in n-$Hg_{0.8}Cd_{0.2}Te$ in the extreme quantum limit : effect of alloy scattering, **Physical Review B 57**, 15345 (1998).

15. C. Haldar, G. S. Mahapatra, **P. Banerji**, D. Banerjee and R. Bhattacharya, Temperature dependence of lyoluminescent decay in saccharides, **Journal of Luminescence 71**, 131 (1997).

14. **P. Banerji**, C. Chakraborty and C. K. Sarkar, Effect of alloy scattering on the low field microwave mobility in n-$Hg_{0.8}Cd_{0.2}Te$ in the extreme quantum limit, **Physica B 229**, 404 (1997).

13. C. Haldar, G. S. Mahapatra, **P. Banerji**, D. Banerjee and R. Bhattacharya, Effect of solute mass and solvent pH on lyoluminescent saccharides used for gamma-ray dosimetry, **Applied Radiation and Isotopes 48**, 77 (1997).

12. **P. Banerji**, C. Chakraborty and C. K. Sarkar, Alloy scattering limited resistivity in n-$Hg_{0.8}Cd_{0.2}Te$ in the extreme quantum limit : screening effect, **Physical Review B 56**, 1001 (1997).

11. G. S. Mahapatra, C. Haldar, **P. Banerji**, D. Banerjee and R. Bhattacharya, Measurements of low radiation dose by photon counting, **Indian Journal of Pure and Applied Physics 34**, 866 (1996).

10. G. S. Mahapatra, C. Haldar, **P. Banerji**, D. Banerjee and R. Bhattacharya, The decays of lyoluminescent saccharides, **Journal of Luminescence 68**, 205 (1996).

9. **P. Banerji**, H. K. Kundu, D. Banerjee and R. Bhattacharya, Mass effect in radiation-induced lyoluminescence of sugars, **Applied Radiation and Isotopes 45**, 899 (1994).

8. **P. Banerji**, H. K. Kundu, D. Banerjee and R. Bhattacharya, The decays of lyoluminescent alkali halides, **Journal of Luminescence 62**, 109 (1994).

7. **P. Banerji**, D. Banerjee and R. Bhattacharya, Setting up of a photon counter with feeble light from light emitting diode, **Indian Journal of Pure and Applied Physics 32**, 849 (1994).

6. **P. Banerji** and C. K. Sarkar, Effect of band nonparabolicity on the hot electron longitudinal conductivity in n-$Hg_{1-x}Cd_xTe$ in the extreme quantum limit magnetic fields at low temperatures, **Solid State Communications 90**, 325 (1994).

5. **P. Banerji** and C. K. Sarkar, Effect of alloy scattering on the longitudinal hot electron drift velocity in n- $Hg_{0.8}Cd_{0.2}Te$ in the extreme-quantum-limit magnetic fields at low temperatures, **Journal of Applied Physics 75**, 1231 (1994).

4. **P. Banerji** and C. K. Sarkar, Effect of quantum screening on the mobility of n-InSb at low temperatures in the extreme quantum limit, **Physica Status Solidi (b) 179**, K71 (1993).

3. C. K. Sarkar and **P. Banerji**, Effect of alloy scattering on the cyclotron resonance linewidth in $Ga_{0.47}In_{0.53}As$ at low temperatures, **Journal of Physics and Chemistry of Solids 53**, 713 (1992).

2. **P. Banerji** and C. K. Sarkar, Estimation of the alloy scattering strength in $Hg_{0.8}Cd_{0.2}Te$ from the magnetic field dependence of the longitudinal resistivity in the extreme quantum limit, **Journal of Applied Physics 70**, 1467 (1991).

1. C. K. Sarkar and **P. Banerji**, Estimation of the alloy scattering potential in $Ga_{0.47}In_{0.53}As$ using cyclotron resonance measurements, **Physica Status Solidi (b) 156**, K145 (1989).