Sandip Mondal

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Educations

2011 –	Ph. D. in Experimental Condensed Matter Physics from Department of Physics, Indian Institute of Science (IISc), Bengaluru, India Project: Solution Processed Memory Devices. Thesis advisor: Prof. V. Venkataraman
2009 – 2011	M.S. in Physical Science from Department of Physics, Indian Institute of Science (IISc), Bengaluru, India Cumulative Grade Point Average (CGPA): 6/8 Masters project on "Bistability of CdTe quantum dots" Thesis advisor: Prof. V. Venkataraman
2004 – 2009	B.Sc.(Honours) in Physics from St. Paul's Cathedral Mission College, University of Calcutta (CU), Kolkata, India Ranking Division: Second

Awards/Nominations

2011 – 2016	Rajiv Gandhi National Fellowship by University Grand Commission (UGC), Govt. of India
2012	National Eligibility Test (NET), conducted by HRD – CSIR, Govt. of India
2009 – 2011	Integrated PhD Scholarship, Dept. of Physics, Indian Institute Science, India
1999 – 2008	National Scholarship Awards, Government of India
1999 – 2000	Science Talent Research Test by JATIYA VIJNAN PARISHAD, India
2002	Achievement cum Diagnostic test in Mathematics by CENTER FOR PEDAGOGICAL STUDIES IN MATHEMATICS, India

Leadership Activities / Community Involvements

2015	Chairman & Chief Co–ordinator of SPECTRUM 2015 – The Mega Cultural, Sports, Literary, Science & Tech Festival of Indian Institute of Science (IISc), Bengaluru, India
2014 – 2015	Chairman of Gymkhana, Indian Institute of Science (IISc), Bengaluru, India
2012 – 2015	Convener of Gymnasium, Gymkhana, IISc, Bengaluru, India
2012	Exam Coordinator: PH 101 (Aug–Dec, 2012) 2:1 Introductory Physics I – Mechanics, Oscillations and waves (2:1), Under Graduate, IISc, Bengaluru, India
2012 – 2013	Organizing Volunteer: KVPY VIJYOSHI Camp – 2012 & 2013 conducted by DST, Govt. of India during Dec 1–3, 2012 and Dec 7–9, 2013 at IISc, Bengaluru, India

Teaching Experiences

- Teaching Assistant (TA): ESc 102 (Jan–Apr, 2012) 2:1 Introduction to Electrical and Electronics Engineering, Under Graduate, IISc, Bengaluru, India

- TA: PH 101 (Aug–Dec, 2012) 2:1 Introductory Physics I – Mechanics, oscillations and waves (2:1), Under Graduate, IISc, India

- TA: PH 102 (Jan–Apr, 2013) 2:1 PH 102: Introductory Physics II – Electricity, Magnetism and Optics (2:1), Under Graduate, IISc, India

- Student's Project Guide(Post–Graduate Level): "Fabrication of Metal–Semiconductor diode and Metal–Insulator–Semiconductor Capacitor and Analysis of I–V characteristics of the Diodes" by Arpan Bhattacharyya & Kallol Sen (Int. PhD Student, Dept of Physics, IISc) from Aug–Dec 2011

- Student's Project Guide(Under Graduate Level): "Quantum Dot Memory Device & Its Temperature Assay" by Diptaparna Biswas (4–Year BS Student of IISc) from April–July 2013

Extracurricular Activities

- Contribution on Bengali Literature: Published Short story "PUTUL" by AAGDUM BAAGDUM (2010) at Indian Institute of Science, Bengaluru – 560 012

- Contribution on Bengali Literature: Best Short Story "KANUR SWAPNO" published in SUKTARA(A Children's magazine) on 2009

- Contribution on Bengali Literature: Best Short Story "SHIB RATRIR SOLTE" & "RATARNAR GOLPO" among 3,000 story selected by FM Rainbow(Calcutta) "GOLPO BOLAR KHELA" on 2007

- Hindustani classical music (TABLA): Performed on stage from 1996 to 2000

Computer Proficiency

C, C++, MATLAB, HTML, Mathematica, Auto CAD, CAM 350, Cle Win, Origin, Corel DRAW, LaTeX, Image J, Lab View, Complete EASE and CORELDRAW10, Multisim

Languages

- Proficient in Bengali, English, Hindi
- Oriya(Partially)

Professional Memberships

- Indian Physical Society (IPS) – Life Member
- Indian Physics Association (IPA) – Life Member

Reviewer

- Indian Journal of Pure & Applied Physics (IJPAP)

Research Experiences

- Working Experiences in 100th class clean room at CeNSE, IISc (The largest clean room in India)
- Deposition and growth process: Oxidation, Chemical vapour deposition, PVD: Sputtering, Thermal evaporation, Wafer Bonding.
- Lithography: Resists, Optical, e–Beam, FIB.
- Etching Process: Wet chemical, Dry chemical.
- Material Modification: Implantation, Annealing, Plasma Bonding.
- Characterization: Optical Microscopes(Normal, Inverted, Fluorescence, UV), FTIR and UV Visible, LASER writer, PL measurement, Surface Profilometer, Double sided mask aligner, Scanning Electron Beam (SEM, TEM), Scanning Probe Microscopy (AFM,STM), Nano/micro Indenter, Rheology.

Contributed Talks

1. **Sandip Mondal** and V. Venkataraman, "*Band structure of a sol-gel spin-coated dielectric: Aluminum Oxide Phosphate*", 58rd Electronic Materials Conference (EMC) at University of Delaware, Newark, DE 19716, **USA** (June 22–24, 2016)

2. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Interface investigation of solution processed high-κ ZrO_2/Si MOS structure by DLTS*", APS March Meeting 2016, Baltimore, Maryland, **USA** (March 14–18, 2016)

3. **Sandip Mondal** "*Colloidal CdTe QDs Electrical Bistable Device*" Summer Project Presentation at Department of Physics, Indian Institute of Science, Bangaluru 560 012, **India** (1st July 2011)

4. **Sandip Mondal** "*Investigation of Instability Pattern of Metal–Poly (dimethylsilo– xane) Bilayer Thin Film*" Mini conference presentation at Department of Physics, Indian Institute of Science, Bengaluru 560 012 ,**India** (6th Dec. 2010)

5. **Sandip Mondal** "*Single–cell Membrane Poration*" Mini conference talk at Department of Physics, Indian Institute of Science, Bengaluru 560 012, **India** (26th Sept. 2010)

6. **Sandip Mondal** "*High Vacuum Technique and Reality*" Seminar at Department of Physics, Indian Institute of Science, Bengaluru 560 012, **India** (27th Jan. 2010)

Contributed Posters

1. **Sandip Mondal** and V. Venkataraman, "*Fully Spin-coated Memory TFT*", 74rd Device Research Conference **(DRC)** at University of Delaware, Newark, DE 19716, **USA** (June 19–22, 2016)

2. **Sandip Mondal,** Arvind Kumar, K.S.R. Koteswara Rao, V. Venkataraman, "*Highly Reliable Spin-coated Titanium Dioxide Dielectric*", 60th DAE Solid State Physics Symposium, Amity University, Noida, UP, **India** (Dec 21–25, 2015)

3. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Electrical Study of Al/HfO_2/p-Si (100) Gate Stack*", 60th DAE Solid State Physics Symposium, Amity University, Noida, UP, **India** (Dec 21–25, 2015)

4. **Sandip Mondal,** Arvind Kumar, K.S.R. Koteswara Rao, V. Venkataraman, "*Highly Reliable Spin-coated Low Temperature Processed Zirconium dioxide*", 18th International Conference on Physics and Semiconductor Devices (IWPSD), Indian Institute of Science, Bengaluru, **India** (Dec 7–10, 2015)

5. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Low temperature solution processed high – k ZrO2 gate dielectric for nanoelectonics*", 18th International Conference on Physics and Semiconductor Devices (IWPSD), Indian Institute of Science, Bengaluru, **India** (Dec 7–10, 2015)

6. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Zirconium doped TiO_2 thin films: A promising dielectric layer*", International Conference on Condense Matter and Applied Physics (ICC), Bikaner ,Rajasthan, **India** (Oct 30–31, 2015)

7. **Sandip Mondal** and V. Venkataraman, "*All inorganic spin–coated nanoparticle memory device*", 73rd Device Research Conference (DRC), Ohio State University, Ohio, **USA** (June 21–24, 2015)

8. Arvind Kumar, **Sandip Mondal** and K. S. R. Koteswara Rao, "*Critical investigation of spin–coated high–k titania thin films based MOS capacitor*", The 5th International Symposium on Organic and Inorganic Electronic Materials and Related Nanotechnologies (EM – NANO 2015), TOKI MESSE, Niigata Convention Center, Niigata, **JAPAN** (June 16 – 19, 2015)

9. Arvind Kumar, **Sandip Mondal**, and K. S. R. Koteswara Rao, "*High–κ TiO_2 thin film prepared by sol–gel spin–coating method*", 59th DAE Solid State Physics Symposium, VIT University, Vellore, Tamilnadu, **India** (Dec. 16–20, 2014)

10. **Sandip Mondal** and V. Venkataraman "*Spin Coated Dielectrics: Organic Vs. Inorganic*" In–house Symposium at Department of Physics, Indian Institute of Science, Bengaluru 560 012, **India** (Nov. 16, 2013)

11. **Sandip Mondal** and V. Venkataraman "*Optical and Electrical Investigation of CdTe QDs/PDDA Bistable Devices*" In–house Symposium at Department of Physics, Indian Institute of Science, Bengaluru 560 012, **India** (Nov. 26, 2011)

Proceedings

1. **Sandip Mondal** and V. Venkataraman, "*Fully Spin-coated Memory TFT*", 74rd Device Research Conference **(DRC) 2016**, IEEE Conference Proceedings 2016
   DOI: Yet to Come

2. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Interface investigation of solution processed high-κ ZrO_2/Si MOS structure by DLTS*", APS March Meeting 2016,
   DOI: http://meetings.aps.org/link/BAPS.2016.MAR.R28.2

3. **Sandip Mondal,** Arvind Kumar, K.S.R. Koteswara Rao, V. Venkataraman, "*Highly Reliable Spin-coated Titanium Dioxide Dielectric*", 60th DAE Solid State Physics Symposium 2015, AIP Conf. Proc. 1731, 080017 (2016)
   DOI: 10.1063/1.4947895

4. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Electrical Study of Al/HfO_2/p-Si (100) Gate Stack*", 60th DAE Solid State Physics Symposium 2015, AIP Conf. Proc. **1731**, 080034 (2016)
   DOI: 10.1063/1.4947912

5. Arvind Kumar, **Sandip Mondal,** K.S.R. Koteswara Rao, "*Zirconium doped TiO_2 thin films: A promising dielectric layer*", International Conference on Condense Matter and Applied Physics (ICC) 2015, AIP Conf. Proc. **1728**, 020582 (2016)
DOI: 10.1063/1.4946633

6. **Sandip Mondal** and V. Venkataraman, "*All inorganic spin–coated nanoparticle memory device*", 73rd Device Research Conference (DRC) 2015, IEEE Conference Proceedings 2015
DOI: 10.1109/DRC.2015.7175589

7. Arvind Kumar, **Sandip Mondal**, and K. S. R. Koteswara Rao, "*High–κ TiO_2 thin film prepared by sol–gel spin–coating method*", 59th DAE Solid State Physics Symposium 2014, AIP Conference Proceedings 1665, 080015 (2015)
DOI: 10.1063/1.4917919

Attended Conferences/Workshops (Selected)

1. Winter School-2015 on Frontiers of Materials Science conducted jointly by University of Cambridge , UK & JNCSR, India during December 7-11, 2015 at JNCSR, Bengaluru 560 064, India

2. International Union for Material Research Society(IUMRS)– "International Conference in Asia (ICA)–2013 during 16–20 December, 2013 at Indian Institute of Science, Bengaluru 560 012, India

3. IACS–APCTP: 5th International Conference – "Novel Oxide Materials and Low Dimensional Systems" during December 9–11, 2013 at Dept. of Physics, Indian Institute of Science, Bengaluru 560 012, India

4. "INDIA NANO 2012: Workshop on Electron and Ion Beam Lithography for Nanotechnology organised" by Raith GmbH Germany & SIMCO Global Tech & Systems Ltd India with Indian Institute of Science during December 3 & 4,2012 at Indian Institute of Science, Bengaluru 560012, India

5. International Conference on "Mathematical Biology" during July 4th to 7th July 2011, Conducted by IISc Mathematics Initiative (IMI) at Indian Institute of Science, Bengaluru 560 012, India

6. "The INUP Familiarization Workshop on Nanofabrication Technologies & iWSG 2011: **3rd** International Winter School for Graduate Students during 3rd to 8th January, 2011", Indian Institute of Science, Bengaluru 560 012, India

Journal Publications

1. Arvind Kumar, **Sandip Mondal**, K.S.R. Koteswara Rao, "Low temperature solution processed high – k ZrO_2 gate dielectric for nanoelectonics", *Applied Surface Science, Vol: 370, pp. 373–379* (**2016**).
DOI: 10.1016/j.apsusc.2016.02.176

2. **Sandip Mondal** and V. Venkataraman, "All Inorganic Spin–coated Nanoparticle Based Capacitive Memory Devices", IEEE *Electron Device Lett., Vol: 37, Issue: 4, pp. 396–399 (***2016**).
DOI: 10.1109/LED.2016.2527689

3. Arvind Kumar, **Sandip Mondal**, K.S.R. Koteswara Rao, "Critical investigation of high performance spin-coated high-κ titania thin films based MOS capacitor", *Journal of Materials Science: Materials in Electronics* (**2016**).
DOI: 10.1007/s10854-016-4423-7

4. A. Kumar, **S. Mondal**, S. G. Kumar, K. S. R. K. Rao, "High performance sol – gel spin – coated titanium dioxide dielectric based MOS structures", *Materials Science in Semiconductor Processing* **40**, 77– 83 (**2015**).
DOI: 10.1016/j.mssp.2015.06.073

5. Arvind Kumar, **Sandip Mondal**, K.S.R. Koteswara Rao, "DLTS Analysis of Amphoteric Interface Defects in High – k TiO_2 MOS Structures Prepared by Sol – Gel Spin – Coating", AIP *Advances* **5**, 117122 (**2015**).
DOI: 10.1063/1.4935749