

Dr. ARVIND KUMAR
Assistant Professor
Department of Physics,
Indira Gandhi National Tribal University (IGNTU),
Amarkantak – 484887 (MP), INDIA

Personnel home page: <https://sites.google.com/site/arvindiisc10/home>

Google Scholar: <https://scholar.google.co.in/citations?user=G-yGll4AAAAJ&hl=en&oi=ao>

E-mail: arvind@igntu.ac.in and arvind9kr@gmail.com

Mob: +91-9482932608



Professional Experience

May, 2017 – Present

Assistant Professor, Department of Physics
Indira Gandhi National Tribal University (IGNTU)
Amarkantak, M. P., India.

Academic Details

2010 – 2017

Ph.D., Physics, Indian Institute of Science, Bangalore

2008 – 2010

M.Sc., Physics, University of Delhi, Delhi

2004 – 2007

B.Sc., PCM, Hindu college, Moradabad *affiliated to* MJPRU, Bareilly

Awards & Honors:

CSIR-UGC-NET (JRF) in Physical Sciences – June 2010.

Research Interests:

High- κ gate dielectrics, Device Physics, Deep level transient spectroscopy, Interface and bulk defects study in wide band gap oxides, Memory devices, Thin film transistors, Quantum dot based devices, and 2-D materials.

Selected Research Articles:

1. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “Experimental evidences of charge transition levels in ZrO_2 and at the Si: ZrO_2 interface by Deep Level Transient Spectroscopy”, Applied Physics Letter, **110**, 132904 (2017). <http://aip.scitation.org/doi/abs/10.1063/1.4979522>
2. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “Tunable band alignment and dielectric constant of solution route fabricated Al/HfO₂/Si gate stack for CMOS applications”, Journal of Applied Physics **121**, 085301 (2017). <http://aip.scitation.org/doi/abs/10.1063/1.4977007>
3. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao “Structural, electrical, band alignment and charge tapping analysis of nitrogen annealed Pt/HfO₂/p-Si (100) MIS devices”, Applied Physics A **122**, 1027 (2016). <https://link.springer.com/article/10.1007/s00339-016-0569-7>
4. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “Low temperature solution processed high-k ZrO_2 gate dielectric for nanoelectronics”, Applied Surface Science **370**, 373–379 (2016). <http://www.sciencedirect.com/science/article/pii/S0169433216303543>
5. **Arvind Kumar**, Sandip Mondal, S. G. Kumar, K. S. R. Koteswara Rao, “High performance sol-gel spin-coated titanium dioxide dielectric based MOS structures”, Materials Science in Semiconductor Processing **40**, 77-83 (2015). <http://www.sciencedirect.com/science/article/pii/S1369800115300275>

Selected Conference Presentations:

1. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “DLTS analysis and Interface engineering of solution route fabricated Zirconia based MIS devices using plasma treatment”, 59th Electronic Materials Conference (EMC), University of Notre Dame, South Bend, Indiana, USA (June 28 – 30, 2017). **Oral**
2. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “Probing the oxygen vacancy related defect states in HfO₂ gate dielectric using DLTS”, APS March Meeting 2017, New Orleans, Louisiana, USA (March 13 – 17, 2017). **Oral**
3. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “Investigation of native defects states in the HfO₂ by DLTS”, Electronic Materials and Applications (EMA 2017), Orlando, Florida, USA (Jan 18 – 20, 2017). **Oral**
4. **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). **Oral**
5. **Arvind Kumar**, Sandip Mondal, K.S.R. Koteswara Rao, “Critical investigation of spin-coated high-k titania thin films based MOS capacitor”, EM - NANO 2015, Niigata Convention Center, Niigata, Japan (June 16 -19, 2015). **Poster**