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Academic Profile

- ✚ Doctor of Philosophy (Ph. D) (Aug 2008-Aug 2013) “Growth of semiconductor and semiconducting oxide nanowires by vacuum evaporation methods”, under Dr. K. Narasimha Rao, Prof. K.Rajanna at the Department of Instrumentation and Applied Physics, ***Indian Institute of Science (IISc), Bangalore, India.***
- ✚ M. Sc (Physics) with specialization in Electronics and Instrumentation (May - 2008) from Dept. of Physics, ***University College of Science, Osmania University, Hyderabad, India.***
- ✚ B. Sc (Physics) (May - 2006) from ***S. V. Degree College, Osmania University, Suryapet, India.***
- ✚ Intermediate (10+2) (May-2003) from ***Govt. Jr. College, Thungathurthy (College Second Topper)***
- ✚ S.S.C (10) (May -2001) From ***Z.P.H.S Gorentla (School Topper)***

Professional experience

- Presently, I am working as an Assistant Professor in the Dept. of Physics, at ***Gitam University***, Hyderabad from July 30, 2014 to till the date.
- As a Visiting faculty in the Dept. of Physics, at ***Indian Institute of Science Education & Research (IISER), Bhopal*** from Jan 1, 2014 to July 28, 2014.

- Research Associate with Dr. K. Narasimha Rao and Prof. K. Rajanna at the Department of Instrumentation and Applied Physics from Aug 2013 to Dec 2013, ***Indian Institute of Science (IISc)***, Bangalore, India.

Papers published in international journals

1. Low temperature VLS growth of ITO nanowires by electron beam evaporation method, R. Rakesh Kumar, Venkateswarlu G, K. Narasimha Rao, K.Rajanna, ***IOP Materials Research Express*** 1 (2014) 035008. ***(Impact factor:0.968)***
2. Low temperature and self catalytic growth of ultrafine ITO nanowires by electron beam evaporation method and their optical and electrical properties” R. Rakesh Kumar, K. Narasimha Rao, K.Rajanna, A. R. Phani. ***Materials Research Bulletin*** 52 (2014) 167-176. (Highlighted in Nature India) ***(Impact factor: 2.43)***
3. Self catalytic growth of Indium Oxide (In₂O₃) nanowires by thermal evaporation, R. Rakesh Kumar, K. Narasimha Rao, K.Rajanna, A. R. Phani ***J. Nanoscience and Nanotechnology*** 14 (2014)5485-5490. ***(Impact factor: 1.55)***
4. Low temperature growth of SnO₂ nanowires by electron beam evaporation and their application in UV light detection, R. Rakesh Kumar, K. Narasimha Rao, K Rajanna, A. R. Phani, ***Materials Research Bulletin*** 48 (2013) 1545-1554. ***(Impact factor: 2.43)***
5. Novel low temperature growth of SnO₂ nanowires and their gas sensing properties, R. Rakesh Kumar, Mitesh Parmar, K. Narasimha Rao, K Rajanna, A. R. Phani, ***Scripta Materialia*** 68 (2013) 408-411. ***(Impact factor: 3.30)***
6. Self catalytic growth of SnO₂ branched nanowires by thermal evaporation, R. Rakesh Kumar, K. Narasimha Rao, A. R. Phani, ***Materials Letters*** 92 (2013) 243-246. ***(Impact factor: 2.43)***
7. Novel co-evaporation approach for the growth of Sb doped SnO₂ nanowires, R. Rakesh Kumar, K. Narasimha Rao, K.Rajanna, A. R. Phani, ***Materials Letters*** 106 (2013) 164-167. ***(Impact factor: 2.43)***

8. Growth of Tin catalyzed Silicon nanowires by e-beam evaporation" R. Rakesh Kumar, K. Narasimha Rao, K. Rajanna, A. R. Phani. ***Advanced Materials Letters*** 4 (2013) 836-840. ***(Impact factor: 2.43)***
9. Growth and characterization of germanium nanowires by electron beam evaporation, R. Rakesh Kumar, D. Yuvaraj , K. Narasimha Rao, ***Materials Letters*** 64 (2010) 1766-1768. ***(Impact factor: 2.43)***
10. Growth of silicon nanowires by electron beam evaporation using indium catalyst, R. Rakesh Kumar, K. Narasimha Rao, A. R. Phani, ***Materials Letters*** 66 (2012) 110-112. ***(Impact factor: 2.43)***
11. Growth and characterization of germanium nanowires on a flexible aluminium substrate by electron beam evaporation , R. Rakesh Kumar, K. Narasimha Rao, A. R. Phani, ***Applied Nanoscience*** 1 (2011) 211-217. ***(Impact factor: Not yet)***
12. Bismuth catalyzed growth of silicon nanowires by electron beam evaporation, R. Rakesh Kumar, K. Narasimha Rao, A. R. Phani, ***Materials Letters*** 82 (2012) 163-166. ***(Impact factor: 2.43)***
13. Growth of tin catalyzed silicon nanowires by electron beam evaporation , R. Rakesh Kumar, K. Narasimha Rao, K. Rajanna, A. R. Phani, ***Advanced Materials Letters*** 4(2013) 836-840. ***(Impact factor: 1.46)***

As a Co-author

14. Morphology controlled synthesis of Al doped ZnO nanosheets on Al alloy substrate by low-temperature solution growth method, V Gaddam, R. Rakesh Kumar, M Parmar, GRK Yaddanapudi, MM Nayak, ***RSC Advances*** 5 (18), (2015) 13519-13524. ***(Impact Factor: 3.28)***
15. Synthesis of ZnO nanorods on a flexible Phynox alloy substrate: influence of growth temperature on their properties, V Gaddam, R. Rakesh Kumar , M Parmar, MM Nayak, K Rajanna, ***RSC Advances*** 5 (109), (2015) 89985-89992, ***(Impact Factor: 3.28)***
16. Biocompatible and Antibacterial SnO₂ Nanowire Films Synthesized by E-Beam Evaporation Method, R Prasad, AR Phani, KN Rao, R Rakesh Kumar,

S Prasad, G Prabhakara, *Journal of biomedical nanotechnology* 11 (6), (2015) 942-950. ***(Impact Factor: 5.3)***

18. Growth and characterization of micro and nanostructures of Lead telluride (PbTe) by thermal evaporation method, V. Tamilselvan, R. Rakesh Kumar, K. Narasimha Rao. *Materials Letters* 96 (2013)162-165. ***(Impact factor: 2.43)***

19. Growth of ZnSe nano and microstructures at high vacuum by thermal evaporation” D. Yuvaraju, R. Rakesh Kumar, V. Tamilselvan, K. Narasimha Rao, M.Sathyanarayana Rao. *Applied Nanoscience* (2013) 1-7.

20. Growth of rutile TiO₂ nanorods on TiO₂ seed layer deposited by electron beam evaporation, V. Tamilselvan, D. Yuvaraj, R.Rakesh Kumar, K. Narasimha Rao. *Applied Surface Science* 258(2012) 4283-4287. ***(Impact factor: 3.15)***

21. Antibacterial properties of nanofiber structured conducting polyaniline synthesized by cost effective wet chemical process, R. G. S. V. Prasad, K. S. V. Chaitanya, M. Tejoram, D. Basavaraju, K. Narasimha Rao, R. Rakesh Kumar, S. Sreenivasan, A. R. Phani, *Journal of Pharmacy Research* 5 (2012)370-373. ***(Impact factor: 2.66)***

22. Optical and Structural properties of highly porous shell structured Fe doped TiO₂ thin films, C. S. Naveen, P. Raghu, H. M. Mahesh, K. Narasimha Rao, R. Rakesh Kumar, A. R. Phani, *Rare Metals* (2014) 1-5. ***(Impact factor: 0.95)***

Conference proceedings

23. Growth of germanium nanowires by electron beam evaporation " R. Rakesh Kumar, K. Narasimha Rao, A. R. Phani. ***AIP Conf. Proc.*** 1512 (2013) 266-267
24. Indium assisted growth of Silicon nanowires by electron beam evaporation " R. Rakesh Kumar, K. Narasimha Rao, K. Rajanna, ***AIP Conf. Proc.*** 1536 (2013) 105-106.

Research Projects

1. ***DST-ECR Project (ECR/2016/000802)*** “Piezo and Pyroelectric Flexible Nanogenerators for Energy Harvesting and Self-Powered Sensor Applications”

Grant amount: **28,97,590 INR**

Duration: 3 years

PI: Dr. Rakesh Kumar ,, **Co-PI:** Dr. Swaroop Raj

2. ***DST-ECR Project (ECR/2016/000932)*** ***just approved*** “Fabrication and study of superconducting nanorods”

Grant amount: Approved stage

Duration: 3 years

PI: Dr. Swaroop Raj ,, Co-PI: Dr. Rakesh Kumar

Papers presented in conferences

1. Low temperature and self catalytic growth of ITO nanowires by electron beam evaporation and their antireflection properties. R.Rakesh Kumar, K. Narasimah Rao, K. Rajanna. A Poster presented at 7th International Conference on Materials for Advanced Technologies (ICMAT), ***Singapore***, June, 30th - 6th July, 2013.
2. Low Temperature Growth of SnO₂ Nanowires by Thermal Evaporation and Their Application in Uv Light Detection, R.Rakesh Kumar, K. Narasimah Rao, A poster presented at International Conference of Young Researchers on Advanced Materials (ICYRAM), ***Singapore***, 1-6th July, 2012.
3. Growth and characterization of micro towers and nanorods by vaccum evaporation methods, Tamilselval V, R.Rakesh Kumar, K. Narasimah Rao. A poster presented at International Conference of Young Researchers on Advanced Materials (ICYRAM), ***Singapore***, 1-6th July, 2012.
4. Synthesis and Characterization of Silicon Nanowires Using Indium Catalyst, R. Rakesh Kumar, K. Narasimha Rao. A poster presented at MRS Fall Meeting & Exhibit, Nov 28- Dec 2, 2011 Bostan (USA)
5. Studies on the growth of Germanium Nanowires By electron beam evaporation, R.Rakesh Kumar, K. Narasimah Rao . A poster presented at International Conference on physics of emerging functional materials (PEFM-2010), Sept 22-24 2010, BARC (India).
6. Growth and characterization of germanium nanowires on a flexible substrate by electron beam evaporation. R.Rakesh Kumar, K. Narasimah Rao. A poster presented at 4th Bangalore Nano Conference, Dec 8-9, 2011, Bangalore (India).
7. VLS growth of silicon nanowires with Bismuth as a catalyst by electron beam evaporation R.Rakesh Kumar, K. Narasimah Rao. A poster presented at 5th Bangalore Nano Conference, Dec 6-7, 2012, Bangalore (India).
8. Semiconductor Nanowires growth by electron beam evaporation" R.Rakesh Kumar, K. Narasimah Rao . A poster presented at 3rd Bangalore Nano Conference, Dec 8-9, 2010, Bangalore (India).

Talks presented in conferences/Symposiums

1. Synthesis and characterization of P-Type Transparent conducting CuAlO₂ thin films, R.Rakesh Kumar, K. Narasimah Rao, A talk given at In-House Symposium 2009
2. Growth and characterization Germanium nanowires by electron beam evaporation, R.Rakesh Kumar, K. Narasimah Rao, A talk given at In-House Symposium 2010.
3. Nanostructures growth by evaporation methods, R.Rakesh Kumar, K. Narasimah Rao, A talk given at In-House Symposium 2012.

Workshops

1. National workshop on theory and practice of x-ray diffraction techniques (TPXRDT - 2009) July 13-17, 2009, School of Physics, Alagappa University, Karaikudi.

Faculty development programs attended

1. Use of ICT in Education for Online and Blended Learning (FDPICT001x) on line course, 2 May 2016 to 10 July 2016.
2. Educational Technology for Engineering Teachers (ET601Tx) on line course, Jan 07, 2016 to Mar 7, 2016.
3. Two-Week ISTE Short Term Training Program (STTP) on "Engineering Physics" from 08th to 18th December, 2015.
4. A Two Day Work shop on Outcome Based Education, 26- 27 Sept 2014.

Research Experience

- ❖ Deposition of thin films by thermal evaporation, electron beam deposition, ion beam assisted deposition (IBAD) and spin coating.

- ❖ Growth of semiconductor and metal oxide nanowires by thermal and electron beam evaporation
- ❖ Growth of nanostructures by solution techniques
- ❖ Vacuum systems, construction, and instrumentation
- ❖ Characterization of thin films (electrical, optical, and structural methods)
- ❖ Scanning Electron Microscope, Transmission Electron Microscopy
- ❖ X-ray Powder Diffractometer
- ❖ I-V measurements
- ❖ UV-VIS NIR, Raman Spectrophotometer.

Research Interest

- ✓ Growth of nanowires by simple electron beam and thermal evaporation methods
- ✓ Growth of nanostructures by solution based methods
- ✓ Understanding the growth of nanostructures by vapor transport method
- ✓ Application of nanostructured materials for sensors, solar cells, energy harvesting and rechargeable Li - ion battery applications
- ✓ Fabrication of nanoscale devices based on nanostructured materials

Journal Reviewer

1. IOP- Nanotechnology
2. Springer: Journal of Materials Science: Materials in Electronics
3. Madridge Journal of Nanotechnology & Nanoscience
4. JovE (Journal of Visualized Experiments)
5. Journal Of Advances In Physics
6. Reviewer DAE-Solid State Physics Symposium
7. Reviewer for **DST Projects**.
8. Material Science Research India

Academic Achievements

1. Cleared M.Sc (Physics) Entrance with **state 7th rank** conducted by Osmania University in 2006.
2. Cleared M.Sc (Physics) Entrance **state 2nd rank** conducted by Kakatiya University in 2006.
3. Cleared GATE-2008 with **90.6** percentile

Awards

- Prathibha Award in SSC
- DST Travel award for attending conference abroad
- Travel award from Centre for International Co-operation in Science (CICS), India to attend the Conference in abroad

Teaching Experience

1. Basic Electronics (Jan-Apr 14) (IISER Bhopal)
2. Engineering Physics-I (July-Dec 2014)
3. Engineering Physics-II (Dec, 2014-April 2015)
4. Engineering Physics (July-Dec 2015)
5. Physics of Nano materials (Dec, 2015-April 2016)
6. Engineering Physics (July-Dec 2016)

References

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