

Dr. Parvathalu Kalakonda
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EDUCATION

PhD Physics Department, Worcester Polytechnic Institute, Worcester, MA, USA 2010-2013

Thesis: "A Study of Thermal Physical Properties of Nano composites of Complex fluids"

Advisor: Professor Germano S. Iannacchione

MS Physics Department, Worcester Polytechnic Institute, Worcester, MA, USA 2010-2013

Thesis: "A Study of Thermal Physical Properties of Nano composites of Liquid Crystals"

Advisor: Professor Germano S. Iannacchione

M.Sc., Physics Department, University Of Hyderabad, Hyderabad, India 2000-2002

Thesis: "A Study of Solutions of The potential Problems in 1-D for Bound States"

Advisor: Professor A. K. Kapoor

Work Experience

Asst. Professor, Department of Physics, GDC HYT, Osmania University, Hyderabad, Telangan, India Aug 2020-Till now

Post-Doctoral Research Associate: Carnegie Mellon university, Pittsburgh, PA, USA 2013-2015

Projects: "A Study of Thermal and Mechanical Properties of Polymer Nano composites"

Principle Investigator: Professor Mohammad Islam

Post-Doctoral Research Fellow: King Abdullah University Science and Technology, KSA 2015-2016

Projects: 1) "*A Study of Oil induced Spontaneous Flows in surfactants*" and *electro-spun fibers*

2) "*Mechanical Properties of Silver Coated Electro-Spun Scaffolds for Antibacterial Activity*"

Principle Investigator: Professor Sahraoui Chaieb

Post-Doctoral Research Fellow: Indian Institute of Science, Bangalore, KA, Indi 2016-2016

Project: "*A Study of Optical properties of $Al_2O_3/CdSe$ Mata-materials*"

Principle Investigator: Professor Jaydeep Basu

Lecturer in Physics: Government Colleges, Telangana, India 2004-2010

AWARDS

- **Summer Internship: Liquid Crystal Institute, Ohio, USA -2011**
- **Merit scholarship during MSc in University of Hyderabad-2002**
- **2nd Rank in Physics Lecturer recruitment conducted by Andhra Pradesh government-2003**
- **Teaching assistantship (TA) to pursue PhD at WPI, MA, USA -2010**
- **Best faculty award from Telangana State, India -2019**

SUMMARY OF RESEARCH

- Study of mechanical properties of nanotubes of aerogel based 3D scaffolds
- Study of thermal and mechanical properties of polymer Nano composites of based 3D scaffolds
- Viscoelastic properties of polymer Nano composites of aerogel based 3D scaffolds
- Thermoelectric properties of conductive polymer Nano composites (PEDOT:PSS, PANI,SWCNT) of aerogel based 3D scaffold.
- Study of oils induced spontaneous flows in surfactants (AOT, Octane, Nonane, Decane)
- Study of optical properties of Al₂O₃/CdSe meta-materials
- Synthesis and characterization of silver nanowires for flexible electrodes
- Synthesis and optical properties of quantum dots, gold and silver nanoparticles
- Study of thermal, electrical and optical properties of polymer Nano composites Thin films
- Micro-fibrous Silver-coated Polymeric Scaffolds with Tunable Mechanical Properties
- Study of thermal physical properties of liquid crystal Nano composites
- Study of thermal physical properties of protein- liquid crystal system
- Leadership, managerial and research experience in various liquid crystals, polymers, semi crystalline polymers, Quantum dots (CdS), nanowires, micro-fluids, meta-materials.
- Great ability to manage multiple projects and prioritize based on deadlines and ability to work in a fast paced environment with great attention.
- Excellent interpersonal skills, effective oral and written communication skills.

PUBLICATIONS

- 1) **P. Kalakonda** et al., Improved Thermoelectric Performance of Single Walled Nanotube-Filled Polymer Composites with Poly (3, 4-ethylenedioxythiophene) Poly (styrenesulfonate)-- (Submitted to RSC advances 2020).
- 2) **P. Kalakonda** et al., Effects of Alignment on Mechanical Properties of Polymer Nanocomposites - (RSC Advances 2020-Under Review).
- 3) **P. Kalakonda** et al., Studies of Electrical, Thermal and Mechanical Properties of Single walled Carbon Nanotube and Polyaniline of Nanoporous Nanocomposites – (submitted to *Appl. Materials. and Interfaces journal- 2020*)
- 4) **P. Kalakonda** et al., Study and Characterization of Oil Induced Spontaneous Flow in Water-Bis(2-ethylhexyl)Sulfosuccinat (AOT) system -(*submitted to Appl. Materials. and Interfaces journal 2020*)
- 5) **P. Kalakonda et al.**, High thermally stable hybrid materials based on amorphous porous silicon nanoparticles and imidazolium-based ionic liquids: Structural and chemical analysis-**Materials Today: Proceedings, J.Mat.Pr.10.106 (2020)**
- 6) **P.Kalakonda** et.al., Enhanced mechanical properties of multiwalled carbon nanotubes/thermoplastic polyurethane- **Nanomaterials and Nanotechnology 9:1-7 (2019)**
- 7) **P. Kalakonda** et al., Synthesis and Optical Properties of Highly Stabilized Peptide-Coated Silver Nanoparticles, **Plasmonic, 1-5, (2018)**
- 8) **P. Kalakonda** et al., Microfibrous Silver-coated Polymeric Scaffolds with Tunable Mechanical Properties-**RSC Advances, 7(55), 34331-34338 (2017)**
- 9) **P. Kalakonda** et al., Thermo-Mechanical Properties of PMMA and Modified SWCNT Composites-**Nanotechnology, Science and Application, 9 ,1-8, (2017)**
- 10) **P. Kalakonda** et al., Synthesis and Optical Properties of Highly Stabilized Peptide-Coated Gold Nanoparticles, **Plasmonic, 12 (4), 1221-1225, (2017)**

- 11) P. Kalakonda., Synthesis of Silver Nanowires Conductive and Transparent Film, **Nanomaterials and Nanotechnology**, **6**, (2016)
- 12) **P. Kalakonda** et al., Study of Electrical and Thermal Conductivities of Sheared Multi-walled Nanotube with Isotactic Polypropylene Polymer Composites---*Nanomaterial and Nanotechnology*, **5(2),5772** (2015).
- 13) **P. Kalakonda**, et al., Calorimetric Study of Phase Transitions in Nanocomposites of Quantum Dots and a Liquid Crystal, *Phase transition.*, **88(2)** (2015)
- 14) **P. Kalakonda**, et al., Studies of Nanocomposites of Carbon Nanotubes and a Negative Dielectric Anisotropy Liquid Crystal, *J. Chem. Phys.*, **140,104908** (2014).
- 15) **P. Kalakonda**, et al., Calorimetric and dielectric study of a negative dielectric anisotropy alkoxy-phenyl-benzoate liquid crystal, *I. J Pure & Appl. Phy.*, **52,689-698** (2015)
- 16) **P. Kalakonda**, et al., the Calorimetric study of nanocomposites of multi-walled carbon nanotube and isotactic polypropylene polymer, *J. Appl. Polym. Sci.*, **130 (1), 587-594** (2013).
- 17) **P. Kalakonda**, et al. Thermal and Electrical Transport Properties of Sheared and Un-Sheared Thin-Film Polymer/CNTs Nanocomposites. **Mater. Res. Soc. Symp. Proc. Vol.1660, 10.1557/opl.2014.589** (2014) (Peer review journal).
- 18) **P. Kalakonda** et al., Cellular Automata Simulations of Thermal Transport Properties of Thin-Film Polymer/CNTs Nano-Composites for Improved Design, **Mater. Res. Soc. Symp. Proc Vol.1619,10.1557/opl.2014.735** (2014) (Peer reviewed journal).
- 19) **P. Kalakonda**, et al. Structure-Electrical Transport Property Relationship of Anisotropic iPP/CNT Films. **Mater. Res. Soc. Symp. Proc Vol.1499, 10.1557/opl.2013.445** (2013) (Peer reviewed journal).
- 20) **P. Kalakonda**, et al. Thermal Transport Properties of Melt-Shear Oriented iPP/Carbon Nanotube Thin Films. **Mater. Res. Soc. Symp. Proc. Vol. 1410, 10.1557/opl. 2013.350**(2012) (Peer reviewed journal).

- 21) **P. Kalakonda**, et al. Electrical Conductivity of Anisotropic iPP Carbon Nanotube Thin Films." **Mater. Res. Soc. Symp.Proc Vol. 1410. No. 1,10.1557/opl.2012.817 (2012) (Peer reviewed journal)**
- 22) S. Sarkar, **P. Kalakonda**, et al. Optical Transport Properties of Oriented Isotactic Polypropylene and Carbon Nanotube Nanocomposite Thin Films. **Mater. Res. Soc. Symp. Proc. Vol. 1410,10.1557/opl.2012.827 (2012) (Peer reviewed paper).**
- 23) **P. Kalakonda**, et al. iPP/CNTs Multifunctional Polymer Nanocomposite. **Mater. Res. Soc. Symp. Proc. Vol. 1403,10.1557/opl.2012.371 (2012) (Peer reviewed paper).**
- 24) **P. Kalakonda**, et al., Effect of protein (Myoglobin) on the isotropic to nematic phase transitions, APS March Meeting Abstracts 1, 1179.
- 25) **P. Kalakonda**, et al., Effect of quantum dots on the isotropic to nematic and nematic to smectic-A phase transitions in nano composites, APS Meeting Abstracts 1, 28011
- 26) **S. Sarkar, P. Kalakonda**, et al., Optical characterization of isotactic polypropylene and carbon nanotube composites using spectroscopic ellipsometry, APS Meeting Abstracts 1, 32004
- 27) **P. Kalakonda**, et al., Macroscopic Ordering of CNTs in a Liquid Crystalline Polymer Nano-Composite by Shearing, APS March Meeting Abstracts 1, 1195
- 28) **P. Kalakonda**, et al., Effect of CNTs and Induced Chirality on Smectic - Smectic Liquid Crystal Phase Transitions, APS Meeting Abstracts 1, 44008
- 29) **P. Kalakonda**, et al., Oil Induced Spontaneous Flow in Water-Bis (2-ethylhexyl) Sulfosuccinat (AOT) system abstract #A53.001 (2016)

Book Chapters Published-2

1. P.Kalakonda et.al Carbon Nanotubes - recent progress SBN: 978-1-78923-052-9
2. P.Kalakonda et.al Silver Nanoparticles SBN: 978-1-78923-478-7

CONFERENCE PRESENTATIONS

- **P. Kalakonda** et al. 46th New England Complex Fluids Workshop, [Oral] (**Harvard University, 2010**), “Macroscopic Ordering of CNT in a Liquid Crystalline Polymer Nano-Composite by Shearing”.
- **P. Kalakonda** et al. 49th New England Complex Fluids Workshop, “Electrical and thermal Transport Properties of Polymer Nano Composites”, [Oral] (**Harvard University 2011**).
- **P. Kalakonda** et al. Electrical transport properties Of Polymer Nano Composites, [Oral] at **Fall MRS (2011)**.
- **P. Kalakonda** et al. Thermal transport properties Of Polymer Nano Composites, [Poster] at **Fall MRS (2011)**.
- **P. Kalakonda** et al. Multifunctional transport properties Of Polymer Nano Composites, [Poster] at **Fall MRS (2011)**.
- **P. Kalakonda** et al. Optical transport properties Of Polymer Nano Composites, [Poster] at **Fall MRS (2011)**.
- **P. Kalakonda** et al. Effect of CNTs and Induced Chirality on Isotropic to Nematic and Nematic to Smectic A Liquid crystal phase transitions, [Oral], **Bulletin of the American Physical Society (2012)**
- **P. Kalakonda** et al. Macroscopic ordering of CNTs in a Liquid Crystalline Polymer Nano-composite by shearing, [Oral], **Bulletin of the American Physical Society (2012)**.
- **P. Kalakonda** et al. Macroscopic Ordering of CNT in a Liquid Crystalline Polymer Nano-Composite, [Poster] (Worcester, MA, 2011); **Bull. Grad WPI (2011)**.
- **P. Kalakonda** et al. 50th New England Complex Fluids Workshop, Evaluation of I-N and N-A Phase transition in Liquid Crystal 9OO4 and MWCNTs mixtures [Oral] (**Yale University, 2012**).
- **P. Kalakonda** et al. Effect of CNT and Induced Chirality on I-N and N-A Liquid Crystal Phase Transitions, [Poster] , **2nd Annual Nano Worcester Symposium, Worcester, WPI. March (2012)**.
- **P. Kalakonda** et al. Evaluation of I-N and N-A Phase transition in Liquid Crystal 9OO4 and MWCNTs mixtures, [Poster], **Worcester, WPI. March 29, Bull. Grad WPI (2012)**.
- **P. Kalakonda** et al. 54th New England Complex Fluids Workshop, ”Effect of quantum dots on the isotropic to nematic and nematic to smectic-A phase transitions in nano composites”, [Oral] (**Harvard University, 2013**)
- **P. Kalakonda** et al. Structure-Electrical Transport property relationship of Anisotropy iPP/CNT films, [Poster], **Sukant Tripathy Annual Memorial Symposium (2012)**.

INVITED TALKS

- “Thermoelectric Performance of Single Walled Nanotube-Filled Polymer Composites” – IISER Kolkata, India (May 2014)
- “Thermal and Mechanical Properties of Polymer Nano-Composites” – University of Hyderabad, Hyderabad, India (May 2014)
- “Thermoelectric Performance of Single Walled Nanotube-Filled Conductive Polymer Composites” –IIT Hyderabad, India (May 2014)

SENERGESTIC ACTIVITIES

- Reviewer for the Journal of Material Chemistry, Phase transition Journal, Nano-material and Nanotechnology, Material science.

TECHNICAL EXPERTIES OF INSTRUMENTATION

1. Systematic design and layout : Techniques for synthesis of nanomaterial's

- Synthesis of carbon nanotube hydrogel or aerogel
- Synthesis of metal or polymer matrix composites
- Synthesis of ultra -long silver nanowires
- Synthesis of quantum dots (CdSe etc) with different sizes
- Synthesis of gold and silver nanoparticles with well controlled size
- Synthesis of liquid crystal Nano composites

2. Device characterization:

- Universal testing machines (Instron 5940 series)
- Dynamic mechanical analysis (RSA-G2 DMA instrument)
- Thermal analysis (AC Calorimetry, DSC, MDSC and TGA)
- J.A.Wollam Ellipsometry for optical characterization,
- X-ray diffraction analysis-Powder XRD (BRUKER AXS)
- Surface and morphology studies (Optical microscope, SEM,TEM and AFM)

- Analysis of optical properties :UV/VIS Spectrophotometer (SHIMADZU, Varian Cary) and FTIR and Raman Spectrometry
- ICP-OES for elemental analysis
- Zeta potential for charge/size distribution analysis
- I-V, C-V measurement
- Electrical measurement : 4-point probe station (Keithley)
- **Developed setups for electrical and thermal conductivity measurements**
- Engineering Analysis Tools: MS office, MATLAB; Data acquisition: Lab VIEW, Adobe illustrator and Origin data analysis.

TECHING EXPERIANCE

Graduate Teaching Assistant: 2010 – 2013

Undergraduate Physics Course: Worcester Polytechnic Institute, Worcester, MA, USA.

General mechanics lab, Electricity and magnetism lab, Intermediate modern physics lab, Wave and oscillation lab and experimental methods. Making materials and helping to students by solving problems in lab classes, conducting helping sessions, setting up labs, grading homework and quizzes.

Graduate and Undergraduate courses: 2016 to till now: (Asst. Professor; Department of Physics; Osmania University, Hyderabad, India.):Solid State Physics, Laser Optics, Electromagnetism, Modern Physics and Classical mechanics, Nuclear Physics, Modern Physics La, Optics Lab, EM Lab etc.

Undergraduate Physics Courses taught: 2002 -2009: Govt. Colleges, Telangana, India

(Lecturer in Physics) Electricity and magnetism, General mechanics, Introduction to Optics, Modern physics, Waves and oscillations, Introduction to thermodynamics, Developed and updated the course material for all courses, prepared exams and home works.

COMPUTATIONAL METHODS

- Finite difference time domain (FDTD) simulation for study of density of states in wire meta-materials

PROFESSIONAL AFFILIATION AND SERVICE

- American Physical Society (APS), Material Research Society (MRS)

REFERENCES:

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