

Prof. (Dr.) Nandakumar Kalarikkal

Senior Professor (Ex-Director & Chair)

School of Pure and Applied Physics &

Ex-Director & Joint Director

International and Inter University

Centre for Nanoscience and Nanotechnology

&

Director-in-Charge

School of Nanoscience and Nanotechnology

Mahatma Gandhi University

Kottayam - 686 560, Kerala, India



Member Syndicate, Member IQAC, Member University Research Committee, Ex-Member Senate Telephone: +91-9447671962 (Mobile), +91-481-2731669 (Office/Fax), +91-481-2731043 (Office)

E-Mail: <u>nkkalarikkal@mgu.ac.in</u>

Websites: www.iiucnn.mgu.ac.in,

www.spap.mgu.ac.inhttp://nandakumarkalarikkal.com/

Google Scholar Citations:

https://scholar.google.com/citations?user=vgr6uKIAAAAJ&hl=en

Books: <u>https://www.amazon.in/Books-Nandakumar-</u>

Kalarikkal/s?rh=n%3A976389031%2Cp_27%3ANandakumar+Kalarikkal

Personal Data

Date ofbirth:	30 th May 1964
Nationality:	Indian
Gender:	Male

Education

M. Sc. (*Master of Science*), Physics (*Specialization in Industrial Physics*) (1986) Cochin University of Science & Technology, Kerala, India Ph. D. (*Doctor of Philosophy*), Semiconductor Physics (1987-1992) Cochin University of Science & Technology, Kerala, India Thesis title: "Optical and thermal properties of selected ternary amorphous semiconductors".

Postdoctoral Fellow (1993-1994)

CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram, Kerala, India

Career Details

Post held	Pay scale	Organization/ University	Duration		Experience
			From (Date)	To (Date)	(in Years & Months)
Senior Professor	Entry pay 1,82,200/-	School of Pure and Applied Physics	27 th July 2019	Till Date	2 Years 7 Months
Director & Chair	37,000-67,000	School of Pure and Applied Physics	17 th October 2018	16 th October 2021	3 years
Hon. Director	37,000-67,000	International and Inter University Centre for Nanoscience and Nanotechnology	11 th October 2017	6 th November 2021	4 years
Hon. Director	37,000-67,000	International and Inter University Centre for Nanoscience and Nanotechnology	11 th September 2015	1⁵t February 2016	6 Months
Joint Director	37,000-67,000	International and Inter University Centre for Nanoscience and Nanotechnology	28 th March 2009	10 th September 2015	6 years & 6 Months
Professor	37,000-67,000	School of Pure and Applied Physics	27 th July 2009	26 th July 2019	11 years
Associate Professor	37,000-67,000	School of Pure and Applied Physics	27 th July 2006	26 th July 2009	3 years
Reader Sr. Lecturer Lecturer	12,000-18,300 2,200-4,000	School of Pure and Applied Physics	27 th July 2003 27 th July 1998 18 th May 1994	26 th July 2006 26 th July 2003 26 th July 1998	12 years

Cited by		
	All	Since 2017
Citations	6421	5863
h-index	42	40
i10-index	164	161
		1900
	I	1425
		950
		475
		0
2015 2016 2017	2018 2019 2020 202	1 2022 0
	Cited by Citations h-index i10-index 2015 2016 2017	Cited by All Citations 6421 h-index 42 i10-index 164

Recognition

- Professor@Lorraine, University of Lorraine, Nancy, France for three years from 2020-2022
- > CNRS Professor, Claud-Bernard Lyon University, Lyon, France
- Visiting Professor, Institute of Jean Lamour, Nancy, France
- Visting Professor, Stockholm University, Sweden
- > Guest Scientist, Leibniz-Institut fur Polymerforschung Dresden, Germany
- Visiting Fellow, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
- > Visiting Fellow, Gulbarga University, Gulbarga, Karnataka under SAP scheme of UGC
- Visiting Faculty, Alemaya University (1998-2002) & Mekkele University (2006-2007), Ethiopia (on leave from Mahatma GandhiUniversity)
- Keynote Speaker in the WasteEng2018 conference held at Prague, Czech Republic held during 1-6 July2019
- Keynote speaker in the International Conference on Polymer Processing and Characterization-ICPPC 2017 held at Gdansk University of Technology, Gdansk, Poland during 27-29 September 2017
- Invited speaker in the DAE SSPS 2018 held at Bhabha Atomic Research Centre, Mumbai in December 2017
- Invited speaker for the Silver Jubilee Research Conference on ,Study of matter using intense radiation sources and under extreme conditions' organized by UGC-DAE CSR-Indore, India during 3-6 November2016

- Conference Fellowship Award of the Seventh International Conference on Phonon Scattering in Condensed Matter held at Cornell University, USA (1992)
- Research Associate Fellowship from DST & CSIR, Govt. of India (1992)
- Senior Research Fellowship from CSIR, Govt. of India (1990)
- > Junior Research Fellowship from Department of Atomic Energy, Govt. of India (1987)

Teaching areas

Materials Science/Solid State Physics, Quantum Optics, Statistical Physics, Quantum Mechanics, Classical Mechanics, Physics of Nanomaterials, Mesoscopic Physics, Introduction to Nanoscience and Nanotechnology (Open Course), Experimental Physics, Nanophotonics

Research Areas

The research works of my group include the syntheses, characterization and applications of various Nanomaterials, LASER Plasma, Ion irradiation effects on various novel materials and phase transitions. The different topics of current research works are:

Nanomultiferroics

In this class of materials, we are synthesizing various systems such as R-CrO₃, R-MnO₃ and R-Fe₂O₄ where R could be Ho, Er, Tm, Yb, Lu or Y. The samples are prepared mainly through sol-gel route and characterized for their structural, multiferroic, linear and nonlinear optical properties using XRD, TGA/DTA, SEM, HRTEM, FTIR spectroscopy, Dielectric spectroscopy, VSM, UV-Vis-NIR spectroscopy, Photoluminescence spectroscopy and Z-scan technique. The thermal parameters such as heat capacity, thermal conductivity and thermal diffusivity are also investigated near the multiferroic transitions. The synthesis and multiferroic coupling of engineered composite nano/multiferroics are also a thrust area of the group.

Nanosemiconductors and Nanophosphors

In this class of materials, we concentrate on various types of quantum dots, metal oxides and Sr₂CeO₄ type materials. The materials are prepared through novel green synthesis routes and sol-gel method and characterized for their various properties. The potential uses of these materials are being explored in different fields which include water purification, sensing and lighting applications.

> Nanocomposites

Under this class of materials various metal, metal oxide, carbon structures (grapheme and CNT), magnetic particles and quantum dot filled polymer nanocomposite materials are prepared using various chemical routes. The interfacial effects and applications of the as prepared nanocomposites are also a thrust area for the group.

Nanoferroelectrics

Under this class, we are mainly concentrating on relaxor type of ferroelectrics such as Strontium Barium Niobate systems and the effect of rare earth ion doping on the linear and nonlinear optical properties. The samples are being characterized for various properties using sophisticated techniques. The phase transitions in this class of materials are also investigated in detail. Electroactive polymer nanocomposites of these materials for tailored applications also explored.

> Nanoferrites

Different nanostructured spinel ferrite systems have been prepared using sol-gel technique and their structural, magnetic, electrical, linear and nonlinear optical properties are investigated. Various systems such as NiFe₂O₄, CoFe₂O₄, ZnFe₂O₄ and mixed compositions of these ferrites have been synthesized and their various physical properties are investigated. The water soluble nanoferrites are also of potential interest to the group.

Nanomedicine

Under this area, we are mainly concentrating on the preparation and characterization of Polymer based scaffolds for biomedical applications. New hybrid polymer nanocomposites for dental applications are also a thrust of our group.

> Nanosensors

The various nanomaterials synthesized in the laboratory are explored for different sensing applications which include nanoparticles incorporated membranes for biosensing and water purification applications.

> Ion beam irradiation effects & Phasetransitions

Heavy ion beam irradiation effects on the structural and multiferroic properties of solgel derived films of selected nanomultiferroic films are investigated under this category. The studies on the phase transitions of bulk and nanomaterials are also investigated using different techniques.

ClimateChange

Aerosol samples collected from urban and semi urban areas of Indian subcontinent are analyzed for chemical characteristics and effects on climatic conditions and atmospheric pollution. Single particle analysis of airborne samples from different altitudes of *Indo Gangetic Planes* and eastern metropolitan areas for source approximation and climate modeling, and cloud seeding are of current interest.

> Water

Development of hybrid nanomaterials for water purification, Photocatalysts for degradation of pesticides and herbicides, Biosensors for detection of pathogens and antibiotics in water bodies

Waste Management and Policy Development

Various strategies and formulation of the management of different wastes such plastic, electronic, biomass, pharmaceutical etc. and the development of policy strategies to implement sustainable effective waste management along with a comparative analysis between developed, developing and under developed countries.

Facilities available

A very good wet chemistry synthesis laboratory with major infrastructure facilities such as Furnaces, Centrifuge, Magnetic stirrers, pH meters, Hot air ovens, Microwave oven, Pelletizer, Ultrsonicator and Spin Coaters, Nanobiology lab with facility for antibacterial and cell culture studies, Nd:YAG LASER, He-Ne LASER, Quadrant Detector.

For experimental characterizations, Dielectric and resistivity measurement facilities from 77K to 773K, UV-Vis_NIR spectrophotometer, Spectrophotoflourimeter with life time measurement facility, X-ray diffractometer, Single Crystal X-ray diffractometer, ME

coupling measurement unit, AFM, HRTEM, NETWORK Anayzer, Gas permeability measurement set up, Electrospinning Unit, Vibrating Sample Magnetometer are available.

SEM, FESEM, Confocal Raman with AFM, GCMS etc. are available as Central facilities of the University

Research Grants

National-Ongoing

- Design and Development of Highly Sensitive Glucose Sensor Based on 2D Transition Metal Dichalcogenides (TMDCs): Theoretical Modelling and Experimental Verification, SERB-CRG,Govt. of India (Principal Investigator), Rs. 25,00,000/-
- Heavy Ion/Gamma ray Engineered Vertically Oriented Graphene Hybrid systems for Environmental Remediation, UGC-DAE-CSR Kolkata Centre Project (Principal Investigator)-Rs. 14,00,000/-
- Physics of Cavitation Bubbles and Hydrogen Generation during Liquid Phase Laser Ablation-BRNS/BRFST-DAE-Govt. of India- (Principal Investigator)-Rs. 39,00,000/-
- Design and applications of magnetically responsive self-assembled polymer nanocomposites, DST-Nano Mission-Govt. of India- (Principal Investigator)-Rs. 220,00,00/-
- Graphene-Silica conjugated epoxy nanocomposites for protective coating and repair applications, DRDO, Ministry of Defence-Govt. of India- (Principal Co-Investigator)-Rs. 110,00,000/-
- Visvesvaraya Ph.D. Scheme for Electronics and IT, MeitY, Ministry of Communications and Information Technology, Government of India- (Principal Co-Investigator)
- Gamma Ray/Heavy Ion Assisted Cross-linked Silicone Rubber Based EMI Shielding Materials, UGC-DAE-CSR Kolkata Centre Project-(Principal Co-Investigator)-Rs. 12,00,000/-
- Design and implementation of small scale environmental energy harvesters by piezoelectric/ multiferroic polymer nanocomposites, Scheme for Transformational and Advanced Research in Sciences (STARS), Ministry of Human Resource Development (MHRD), Govt. of India- (**Principal Co-Investigator**)- Rs. 50,56,000/-

> SPARC Funded by MHRD-Govt. of India Projects-Ongoing-(Principal Investigator)

Project Title	Collaborating University	Sanctioned Budget
Bio-filler-Interfaced Electrospun PVDF Hybrid Piezoelectric Generator for Mechanical Energy Harvesting	UNIVERSITÉ DE MONTPELLIER & University of Lorraine, France	Rs. 78,93,348
Study of urea oxidation electrocatalysis for energy conversion from waste	Ben Gurion University of the Negev & Ariel university, Israel	Rs. 66,69,785

Vachellianilotica based biocompatible hybrid nanostructured coatings/films for seeds and fruits	North Carolina State University & Kansas State University, USA	Rs. 66,30,385
Nanoscale contrast agents for diagnostic biomedical imaging	Nanyang Technological University (NTU) , Singapore	Rs. 59,88,299

International-Ongoing:

- Advanced polymer nanocomposites for micro-actuator and energy harvesting devices, CNRS International Research Partnership, Institut Jean Lamour, IJL (CNRS UMR7198/University of Lorraine, France) and International and Inter University Centre for Nanoscience and Nanotechnology, IIUCNN (Mahatma Gandhi University - MGU, Kerala, India) as Prof. Didier Rouxel French PI and Prof. Nandakumar Kalarikkal as Indian PI-Euro 15,000 per year for 5 years (2022)
- Green Synthesized Noble Metal-Nanoclusters Modified Nanostructures: From fundamental studies to their applications in energy conversion: CNRS Project through IEA-International Emerging Actions between Institute of Light Matter with Prof. Rodolphe Anotoine as French PI, Prof. Sabu Thomas as Indian PI and Prof. Nandakumar Kalarikkal as Indian co-PI (2022)
- 3. Bio-Filler-Interfaced Electrospun PVDF-Nanomultiferroic Hybrid Piezoelectric Generator for Mechanical Energy Harvesting jointly with the **Institute of Jean Lamour & University of Lorraine**, France under the CEFIPRA Scheme- as **Indian Principal Investigator**-Amount Sanctioned-Rs. 59,79,752/-
- 4. Fabrication of three-dimensional nanocellulose-based multifunctional materials for tissue engineering and regenerative medicine applications-Under the **BRICS scheme** with **Russia, China, and India** as **Indian Co-PI**-Sanctioned for the Indian side-Rs. 55,00,000/-
- Biobased Scaffolds, Membranes and Hydrogels for Improved Wound Healing and Bone Regeneration (BIOHEAL)-Swedish Research Link Grant in collaboration with Prof. Aji Mathew, University of Stockholm, Sweden- as Indian Co-PI
- 6. Advanced Nanocomposites for Micro and Nanosensors Applications-under the PICS scheme with Prof. Didier ROUXEL, *Institut Jean Lamour* UMR CNRS n°7198 *Université de Lorraine* BP 70239 54506 Vandœuvre-lès-Nancy Cedex –*France* Prof. Nandakumar Kalarikkal as Indian Co-PI

Projects completed:

- 1. Irradiation effects on the structural and electrical properties of selected ferroelectric ceramics, NSC-UFUP project-IAC-Govt. of India-(**Principal Investigator**)
- 2. Ion beam irradiation effects on the structural and ferroic properties of selected sol-gel derived films of nanomultiferroics-UGC-DAE-CSR Kolkata Centre Project- (**Principal Investigator**)
- 3. Nanoparticle aggregation behavior in polymer nanocomposites- UGC-DAE-CSR Kolkata Centre Project-(**Principal Investigator**)
- 4. Development of one dimensional multiferroic nanocomposites for device applications' under the SRS scheme- KSCSTE-Govt. of Kerala-(**Principal Investigator**)

- 5. Nano Materials: Synthesis, characterization and applications, DST, New Delhi (**Principal Co-Investigator**)
- 6. Novel thermoplastic elastomer composition for Neutron Shielding applications, BRNS, Department of Atomic Energy, Govt. of India-(**Principal Co-Investigator**)
- 7. Development of supertough thermosets from self assembled Nanostructured block copolymer/epoxy resin blends, DRDO, Ministry of Defence of the Government of India-(**Principal Co-Investigator**)
- 8. Development of engineered nano-structured materials for high performance applications-DST-Nano Mission-Govt. of India-(**Principal Co-Investigator**)
- 9. Development of Multi Walled Carbon Nanotube Filled Polycarbonate/ Polypropylene Double Percolating Conductive Polymer Blend Nanocomposites for Electromagnetic Interference Shielding Gaskets for Mobile Phones–DIT-New Delhi-(**Principal Co-Investigator**)
- 10. Miscibility, morphology and properties of NR/SBR and BR based binary and ternary rubber blends and the influence of CB and silica filler distribution on blend properties, MRF Corp Limited, Chennai, Tamil Nadu 6000-(Principal Co-Investigator)
- 11. Novel Thermoplastic Elastomer composition for neutron shielding applications, BRNS DAE, Govt. of India-(**Project Co-Investigator**)
- 12. Studies on cellulose nanocrystals and their applications in nanocomposites with varying technological applications, DST, Govt. of India-(**Principal Co-Investigator**)
- 13. Development of super tough nanocomposites from epoxy resin, liquid rubber and nanoclay, Kerala State Council for Science, Technology and Environment (KSCSTE under the SARD program-(**Project Co-Investigator**)
- 14. Engineering of Nanostructured high performance epoxy liquid blends with controlled nanoparticle localization, CSIR-Govt. of India-(**Project Co-Investigator**)
- 15. High performance nanoclay nanocomposites for dental application, ICMR, Coordination and Promotion of Biomedical Research, Govt. of India-(**Project Co-Investigator**)
- 16. Systematical investigation of mechanical properties of composites materials made from plasma modified thermoplastic matrix and fiber filler, SurfaceTreat, Inc., U Skladiště 2125, 511 01 Turnov, Czech Republic-(**Project Co-Investigator**)

Patents granted/filed

- A polymer Nanocomposite, Process, And Application there-of, WIPO Publication number: WO2016142848 A1, Publication date: Sep 15, 2016, and Indian patent Application No: 638/DEL/2015 Mohammed Arif P, Sabu Thomas, Nandakumar Kalarikkal
- New Poly(trimethyleneterephthalate) based nanocomposite formulation for EMI Shielding; Patent Application No:201841003767Aswathi M.K, Ajitha A. R., Dr. Sabu Thomas, Dr. NandakumarKalarikkal, M. Padmanabhan, Lovely P. Mathew
- 3. MWCNTs reinforced polymer blend nanocomposites of Poly(trimethylene terephthalate) and Polypropylene for EMI shielding application; Patent Application No:201841003768 Ajitha A R, Aswathi M K, Dr. Sabu Thomas, **Dr. Nandakumar Kalarikkal**, Lovely Mathew P, Geethamma VG

- Invention of High Performance EMI Shielding Coating From Low Cost Carbon Black with XLPE;Patent Application No: 201841040343; ApparaoGudimalla, Jince Thomas, Dr. Sabu Thomas, Dr. Nandakumar Kalarrikkal, ZakiahAhmad
- Nano Cellulose based EMI shields preparation and thereof; Patent Application No: 201841040344; Deepu A Gopakumar, Avinash R Pai, Dr. Nandakumar Kalarikkal and Dr. SabuThomas
- 6. Solid one dimensional conducting polymer fibers using electrospinning ; Dr. Sanal Sebastian Payyappilly, Jayesh Cherusseri, Prof. Sabu Thomas, Dr. Nandakumar Kalarikkal; Patent Application No:201841040346

Research Collaborations

- > Bhabha Atomic Research Centre, Mumbai, India
- > Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
- > Saha Institute of Nuclear Physics, Kolkata, India
- > UGC-DAE Consortium for Scientific Research-Kolkata Centre, Kolkata, India
- > Raman Research Institute, Bangalore, India
- > Cochin University of Science & Technology, Kochi, India
- > Inter University Accelerator Centre, New Delhi, India
- > Central University, Kannur, Kerala, India
- > Indian Institute of Science, Bangalore, Karnataka, India
- > Indian Institute of Tropical Meteorology, Pune, India
- > Institute of Plasma Resaerch, Gandhi Nagar, Gujarat, India
- > Walter Sisulu University, SouthAfrica
- > Johannesburg University, SouthAfrica
- > Jožef Stefan Institute, Ljubjana, Slovenia
- > Uninversity of Technology- MARA, Malaysia
- > University of Lorraine & Institute of Jean Lamour, France
- > University of South Brittany, Lorrient, France
- ➢ Kansas State University, USA
- > North Carolina State University, USA
- > Deakin University, Australia
- Stockholm University, Sweden
- > Nanyang Technological University, Singapore
- Ariel University, Israel
- > Ben Gurion University of the Negev, Israel
- University of Montpellier, France
- > Institue of Light Matter, Claude Bernard University Lyon, France

Publications (2022)

- 1. Detection of nitrobenzene in pristine and metal decorated 2D dichalcogenide VSe2: Perspectives from density functional theory, G Sanyal, S Lakshmy, A Vaidyanathan, N Kalarikkal, and B Chakraborty, *Surfaces and Interfaces*, 29, 101816, 2022.
- TiO2–rGO nanocomposites with high rGO content and luminescence quenching through green redox synthesis, S Preetha, R Pillai, S Ramamoorthy, A Mayeen, K M Archana, N Kalarikkal, B Narasimhamurthy, IC Lekshmi IC. *Surfaces and Interfaces* 1;30:101812, 2022.
- The effect of adding carbon black to natural rubber/butadiene rubber blends on curing, morphological, and mechanical characteristics, A Vayyaprontavida Kaliyathan, A V Rane, M Huskic, K Kanny, M Kunaver, N Kalarikkal, S Thomas, Journal of Applied Polymer Science. 2022 Apr 20;139(16):51967.
- 4. Mechanical responses of epoxy/cloisite nanocomposites, A Surendran, J Pionteck, N Kalarikkal, and S Thomas, *Materials Chemistry and Physics*, 125755, 2022.
- Cashew Apple Extract: A Novel, Potential Green Reducing Agent for the Synthesis of Reduced Graphene Oxide. J S George, J K Paduvilan, P Velayudhan, N Kalarikkal, N Hameed, and S Thomas, *Journal of Nano Research* (Vol. 71, pp. 57-70), 2022. Trans Tech Publications Ltd.
- 6. Cisplatin encapsulated nanoparticles from polymer blends for anti-cancer drug delivery, K S Joshy, A Hasan, R Augustine, S M Alex, A A Zahid, Y Dalvi, **N Kalarikkal**, and H Chi, *New Journal of Chemistry*, 2022
- 7. Hybrid Nanostructures for Biomedical Applications.Rajakumari, R., Tharayil, A., Thomas, S., & Kalarikkal, N. (2022). In *Hybrid Phosphor Materials* (pp. 275-301). Springer, Cham.
- Hybrid Phosphor Materials for Optoelectronic Application, James, J., Thomas, S. M., Somakumar, A. K., Joseph, B., Kalarikkal, N., & Thomas, S. (2022), In *Hybrid Phosphor Materials* (pp. 241-253). Springer, Cham.
- Sustainable Lithium-ion battery separators derived from Polyethylene oxide/Lignocellulose coated electrospun P (VDF-TrFE) nanofibrous membranes. Bicy, K., Mathew, D. E., Stephen, A. M., Royaud, I., Poncot, M., Godard, O., Kalarikkal, N... & Thomas, S. (2022). *Surfaces and Interfaces*, 101716
- Comparative study of the structural and optical behavior of Er3+ doped Y2SiO5 phosphor prepared by different methods. Upadhyay, K., Thomas, S., Tamrakar, R. K., Kalarikkal, N., & Butoliya, S. (2022). *Materials Science and Engineering: B*, 275, 115511
- 11. Advances and future outlook in epoxy/graphene composites for anticorrosive applications. George, J. S., Paduvilan, J. K., Salim, N., Sunarso, J., **Kalarikkal, N**., Hameed, N., & Thomas, S. (2022). *Progress in Organic Coatings*, *162*, 106571
- Synthesis of eco-friendly graphene from agricultural wastes. Rajakumari, R., Thomas, S., & Kalarikkal, N. (2022). In *Agri-Waste and Microbes for Production of Sustainable Nanomaterials* (pp. 215-230), Elsevier
- State-of-the-art technologies for the development of nanoscale materials. Abraham, A. R., Kalarikkal, N., & Thomas, S. (2022). In *Design, Fabrication, and Characterization of Multifunctional Nanomaterials* (pp. 3-10), Elsevier
- 14. Natural Polymers: Perspectives and Applications for a Green Approach. Jacob, J., Gomes, F., Haponiuk, J. T., **Kalarikkal**, N., & Thomas, S. (Eds.). (2022). CRC Press.

- 15. Handbook of Research on Nano-drug Delivery and Tissue Engineering: Guide to Strengthening Healthcare Systems. Rajendran, R., Maria, H. J., Thomas, S., & Kalarikkal, N. (Eds.). (2022). CRC Press
- 16. A Holistic and Integrated Approach to Lifestyle Diseases. George, J. S., George, A., Sebastian, M., **Kalarikkal**, N., & Thomas, S. (2022), Apple Academic Press

Publications (2021)

- 1. Exotic magnetic properties and enhanced magnetoelectric coupling in Fe3O4-BaTiO3 heterostructures. Revathy, R., **Kalarikkal, N.,** Varma, M. R., & Surendran, K. P. (2021). *Journal of Alloys and Compounds, 889,* 161667.
- The effect of adding carbon black to natural rubber/butadiene rubber blends on curing, morphological, and mechanical characteristics. Vayyaprontavida Kaliyathan, A., Rane, A. V., Huskic, M., Kanny, K., Kunaver, M., Kalarikkal, N., & Thomas, S *Journal of Applied Polymer Science*, 51967.
- 3. Origin of magnetic, magnetoelectric effect and the influence of reentrant ferroelectric phase on the structural and multiferroic properties of Dy3+-Fe3+ co-substituted BaTiO3 ceramics. Rubavathi, P. E., Dhayanithi, D., Giridharan, N. V., Rahul, M. T., **Kalarikkal**, N., & Sundarakannan, B. (2021). *Journal of Magnetism and Magnetic Materials*, *538*, 168260.
- 4. Sea urchin-like Ni encapsulated with BaTiO3 to form multiferroic core-shell structures for room temperature magnetoelectric sensors. Revathy, R., Thankachan, R. M., Kalarikkal, N., Varma, M. R., & Surendran, K. P. (2021). *Journal of Alloys and Compounds, 881*, 160579.
- Interfacial tuning and designer morphologies of microporous membranes based on polypropylene/natural rubber nanocomposites. Bicy, K., Rouxel, D., Poncot, M., Royaud, I., Bourson, P., Chapron, D., , Kalarikkal, N ... & Thomas, S. (2021). *Journal of Applied Polymer Science*, 138(41), 51208.
- Effect of HAF carbon black on curing, mechanical, thermal and neutron shielding properties of natural rubber-Low-density polyethylene composites. Sajith, T. A., Praveen, K. M., Thomas, S., Ahmad, Z., Kalarikkal, N., Dhanani, C., & Maria, H. J. (2021). *Progress in Nuclear Energy*, 141, 103940.
- Self-assembled nanostructured viscoelastic and thermally stable high performance epoxy based nanomaterial for aircraft and automobile applications: An experimental and theoretical modeling approach. Remya, V. R., Pious, C. V., Adeyemi, O. O., Parani, S., Rajendran, J. V., Maluleke, R., Kalarikkal, N ... & Oluwafemi, O. S. (2021). Colloids and Surfaces A: Physicochemical and Engineering Aspects, 627, 127236.
- 8. Vertical profile of aerosol characteristics including activation over a rain shadow region in India. Varghese, M., Jose, J., Anu, A. S., Konwar, M., Murugavel, P., **Kalarikkal, N**., ... & Prabha, T. V. (2021). *Atmospheric Environment*, *262*, 118653.
- 9. Catechol detection in pure and transition metal decorated 2D MoS2: Acumens from density functional theory approaches. Lakshmy, S., Sanyal, G., Vaidyanathan, A., Joseph, S., **Kalarikkal**, N., & Chakraborty, B. (2021). *Applied Surface Science*, *562*, 150216.
- Au-GO nanohybrids as SERS platforms fabricated via pulsed laser ablation. Nancy, P., Thomas, S., & Kalarikkal, N. (2021, September). In *AIP Conference Proceedings* (Vol. 2369, No. 1, p. 020126). AIP Publishing LLC.

- Impact of Reentrant Ferroelectric-tetragonal Phase on the Structure, Spectral, Electric, Magnetic and Magnetoelectric Properties of Gd3+-Fe3+ Co-substituted BaTiO3 Ceramics. Rubavathi, E., Dhayanidhi, D., Giridharan, N. V., Rahul, M. T., Kalarikkal, N., & Sundarakannan, B. (2021).
- Spectroscopic, Microscopic, X-Ray Diffraction and Thermal Stability Studies of Stearic Acid Modified Hydrotalcite Formed through Memory Effect. Daniel, S., Alapat, P., Kalarikkal, N., & Thomas, S. (2021, August). In *Macromolecular Symposia* (Vol. 398, No. 1, p. 2000277).
- 13. Mechanical and Thermal Properties of Epoxy/Poly (Styrene-co-Acrylonitrile)(SAN)/Organoclay Nanocomposites. In *Macromolecular Symposia* (Vol. 398, No. 1, p. 2000184). Surendran, A., Geethamma, V. G., **Kalarikkal, N**., & Thomas, S. (2021, August).
- Theoretical Study on Understanding the Effects of Core Structure and Energy Level Tuning on Efficiency of Nonfullerene Acceptors in Organic Solar Cells. Joseph, S., Ravva, M. K., Davis, B. A., Thomas, S., & Kalarikkal, N. (2021). *Advanced Theory and Simulations*, 4(8), 2100019.
- Cloud and aerosol characteristics during dry and wet days of southwest monsoon over the rain shadow region of Western Ghats, India. Varghese, M., Jose, J., Anu, A. S., Murugavel, P., Resmi, E. A., Bera, S., Kalarikkal, N... & Prabha, T. V. (2021). *Meteorology and Atmospheric Physics*, 133(4), 1299-1316.
- 16. Enrichment of magnetoelectric effect in the hexagonal BaTi1-xCoxO3 artificial type-II multiferroics by defects. Rubavathi, P. E., Rahul, M. T., **Kalarikkal**, N., Adhikary, G. D., & Sundarakannan, B. (2021). *Journal of Magnetism and Magnetic Materials*, 529, 167927.
- Investigation of photoluminescence behavior of Gd3+ doped Y2SiO5 phosphor prepared by combustion synthesis method. Upadhyay, K., Thomas, S., Tamrakar, R. K., & Kalarikkal, N. (2021). *Chemical Papers*, 75(7), 3073-3079.
- Plasma-assisted fabrication of hydrophobic siloxane based sol-gel-coated coir fibres. Praveen, K. M., Primc, G., Simončič, B., Gorjanc, M., Pillin, I., Seantier, B., Kalarikkal, N... & Thomas, S. (2021). *Surface Innovations*, 40(XXXX), 1-12.
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- 13. Green synthesis of CdSe/ZnS core-shell quantum dot nanophosphors and its Poly methyl methacrylate composite thin film in the visible spectral range, Sneha Mohan, Theertha Soman, Samuel O Oluwafemi, Soney C. George, Patrice Miska, Didier Rouxel, Nandakumar Kalarikkal and Sabu Thomas, *MRS Proceedings*, 1748, 2015
- 14. Cr³⁺-substitution induced structural reconfigurations in the nanocrystalline spinel compound ZnFe₂O₄ as revealed from X-ray diffraction, positron annihilation and Mössbauer spectroscopic studies, R M Thankachan, J Cyriac, B Raneesh, **N Kalarikkal**, D Sanyal and P M GNambissan, *RSC Adv.*, **5**, 64966-64975, 2015
- 15. Electric, magnetic and optical limiting (short pulse and ultrafast) studies in phase pure (1–*x*)BiFeO₃–*x*NaNbO₃ multiferroic nanocomposite synthesized by the pechini method, R P Ummer, P Sreekanth, B Raneesh, R Philip, D Rouxel, S Thomas and N Kalarikkal, *RSC Adv.*, 5, 67157-67164, 2015
- 16. Effect of ZnO Nanoparticles on the In Vitro Degradation of Electrospun Polycaprolactone Membranes in Simulated Body Fluid, R Augustine, N Kalarikkal and S Thomas, International Journal of Polymeric Materials and Polymeric Biomaterials, 65(1), 28-37, 2015
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- Clogging Free Electrospinning of Polycaprolactone Using Acetic Acid/Acetone Mixture, R Augustine, N Kalarikkal and S Thomas, *Polymer-Plastics Technology and Engineering*, 55(5), 518-529, 2015.
- Synthesis and characterization of polyaniline coated gold nanocomposites, S N M Zuber, D Kamarun, H Zaki, M S Kamarudin, S Thomas and N Kalarikkal, AIP Conference Proceedings, Vol. 1674, No. 1, p. 020010, AIP Publishing LLC, 2015
- 20. Electrospun PCL membranes incorporated with biosynthesized silver nanoparticles as antibacterial wound dressings, R Augustine, N Kalarikkal and S Thomas, *Applied Nanoscience*, 6(3), 337-344, 2015
- Structural and Optical Properties of Functionalized Multi-walled Carbon Nanotubes, S Yaragalla, G Anilkumar, N Kalarikkal and S Thomas, *Materials Science in Semiconductor Processing*, 41, 491-496, 2015
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- 2. Structural and Mechanical Properties of Yttrium Barium Copper Oxide-Polystyrene Microcomposite, Rosalin Abraham, Selvin Thomas P, Soosy Kuryan, Jayakumari Issac, K Nandakumar, Sabu Thomas, *Journal of Applied Polymer Science*, **118**, **2**, **1027-1041**, **2010**
- 3. Structure and magnetic properties of the Al_{1-x}Ga_xFeO₃ family of oxides: A combined experimental and theoretical study, Saha Rana, Shireen Ajmala, Bera A K, Shirodkar Sharmila N, Sundarayya Y, **Kalarikkal Nandakumar**, Yusuf S M, Waghmare Umesh V, Sundaresan A, Rao C N R, *Journal of Solid-StateChemistry*, Vol. 184, Issue 3, 494,2011.
- 4. A New Synthetic Pathway of Sr₂CeO₄ Blue-White Phosphor and its Characterization, R Seema and N Kalarikkal, *Journal of Luminescence*, **31**, **10**, **2181**, **2011**
- Nonlinear optical properties of nanosized rare earth doped strontium barium niobate ceramics, J Nuja, C S Suchand Sandeep, P Reji and N Kalarikkal, Spectroscopy Letters, 44, 334, 2011
- 6. An open aperture z-scan study of Sr₂CeO₄ blue phosphor, R Seema, C S SuchandSandeep, Philip Reji, **N Kalarikkal**, J. *Alloys and Compounds*, **509**, **34**, **8573-8576**, **2011**
- 7. Mossbauer Study of Ni, Ni-Co and Co Ferrite Nanoparticles, Jeevan Job Thomas, N Kalarikkal, *American Institute of Physics Conference Proceedings*, Vol. 1349, 1175-1176, 2011
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- 11. Nonlinear optical absorption studies of sol-gel derived Yttrium Iron Garnet (Y₃Fe₅O₁₂) nanoparticles by Z-scan technique, B. Raneesh, I. Rejeena, P. U. Rehana, P. Radhakrishnan, A. Saha, N Kalarikkal, *Ceramics International*, **38**, **1823**, **2012**
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- 15. Cation distribution and micro level magnetic alignments in the nanosized nickel zinc ferrite, Jeevan Job Thomas, A B Shinde, P S R Krishna, N Kalarikkal, Journal of Alloys and

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- 18. Studies on Structural and optical properties of ZnO and Mn-dopes ZnO nanopowders, A S Menon, N Kalarikkal, S Thomas, *Indian Journal of Nanoscience*, **1**, **2**, **2013**
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- 20. Surface energy properties of Yttrium Barium Copper Oxide filled Polystyrene composites, Rosalin Abraham, Jayakumari Isac, **N Kalarikkal**, Y J Yakhmi, S Thomas, *Advances in Ceramic Science and Engineering* (ACSE), 2, 2, 2013
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- 23. Electrical properties of Graphene filled natural rubber composites, S Yaragalla, Yahaya Subban Ri Hanum, Chin Han Chan, N Kalarikkal and S Thomas, Advanced Materials Research, Vol. 812, 263, 2013
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- 25. A facile and rapid method for the black pepper leaf mediated green synthesis of silver nanoparticles and the antimicrobial study, Robin Augustine, S Thomas, N Kalarikkal, Applied Nanoscience, 4, 809-818, 2014
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- 36. Vibration and Sound Damping in Polymers, V G Geethamma, R Asaletha, **N Kalarikkal**, SThomas. *Resonance*, *19*(9), 821-833, September 2014
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- 42. Wound healing analysis of pectin/carboxymethyl cellulose/microfibrillated cellulose based composite scaffolds. N Ninan, M Muthiah, I K Park, **N Kalarikkal**, A Elain, T W Wong, Sabu Thomas and Y Grohens, *Materials Letters*, 132, 34-37, 2014

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- 5. On the imaging application of photoacoustic technique K.N. Madhusoodanan, **N Kalarikkal**and Jacob Philip *J.Acoust.Soc.Ind., XVIII (3&4),* **28(1990)**
- 6. Photoacoustic investigation of optical energy gap in As-Se-Teglasses **N Kalarikkal**and Jacob Philip In Book: *Physical Acoustics (Plenum Press)*, **545 (1991)**
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- 19. Sol-gel synthesis and structural characterization of ferroic YCrO₃Shiji Krishnan and N Kalarikkal *Solid State Physics (India), Vol. 53, 1239 (2008)*
- 20. Magnetic Study on Ni-Zn Ferrite nanosystems using VSM Jeevan Job Thomas and N Kalarikkal *Indian Journal of Cryogenics*, Vol. 33. No. 2 4 (2008)
- 21. Structural and optical characterization of sol-gel synthesized Sr₂CeO₄ bluephosphor R. Seema and **N Kalarikkal** *Solid State Physics (India), Vol.* 54, (2009)
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Book Chapters

- 1. **Role of wound dressings in the management of chronic and acute diabetic wounds** Robin Augustine, **Kalarikkal**, **N**., Thomas, S. In Diabetes Mellitus and Human Health Care: A Holistic Approach to DiagnosisandTreatment; George, A., Augustine, R., Sebastian M. Eds.; Apple Academic Press:(2014)
- 2. **Thin Film and Nanostructured Multiferroic Materials**, B. Raneesh and **Nandakumar Kalarikkal** in the book Advanced Nanomaterials: Synthesis, Properties, and Applications, Apple Academy Press(2014)
- 3. **Current Advances in Nanomedicine: Applications in Clinical Medicine and Surgery**, Indu Raj P, Vinod Kumar, and **Nandakumar Kalarikkal** in the book Advanced Nanomaterials: Synthesis, Properties, and Applications, Apple Academy Press(2014)
- 4. **Recent Advances in Nanomedicine: Applications in Diagnosis and Therapeutics**, Sandhya Gopalakrishnan, Kannan Vaidyanathan, and **Nandakumar Kalarikkal** in the book Advanced Nanomaterials: Synthesis, Properties, and Applications published by Apple Academy Press(2014)
- 5. **Tissue Engineering: Principles, recent trends and the future,** Ansuja P Mathew, Robin Augustine, Nandakumar Kalarikal, Sabu Thomas: In Nanomedicine and Tissue engineering- State of the art and recent trends, Apple Academic Press, Inc.(2015)
- 6. **Nanomedicine: from concept to reality** Rakhimol K.R, Robin Augustine, Sabu Thomas, Nandakumar Kalarikkal: In Nanomedicine and Tissue engineering- State of the art and recent trends, Apple Academic Press, Inc.(2015)
- 7. Electrospun matrices for biomedical applications–Recent advances, Deepa P. Mohanan, Robin Augustine, Nandakumar Kalarikkal, Radhakrishnan E.K, Sabu Thomas: In Nanomedicine and Tissue engineering- State of the art and recent trends, Apple Academic Press, Inc.(2015)
- 8. **Cutaneous wound care: Grafts to tissue engineered skin substitutes,** Robin Augustine, Bhavana Venugopal, Nandakumar Kalarikkal, Sabu Thomas: In Nanomedicine and Tissue engineering- State of the art and recent trends, Apple Academic Press, Inc.(2015)
- 9. **Polyuronates and their application in drug delivery and cosmetics, Robin Augustine,** Snigdha S, Nandakumar Kalarikkal, Sabu Thomas: In Green Polymer and The Environment Pollution Control, Apple Academic Press, Inc.(2015)
- Nanomedicine: From Concept to Reality, K R Rakhimol, R Augustine, S Thomas, N. Kalarikkal - Nanomedicine and Tissue Engineering: State of the Art and RecentTrends CRC Press, pages 1-30, 2016, ISBN9781771881180
- 11. **Tissue Enginering: Principles, Recent Trends and the Future,** A P Mathew, R Augustine, N Kalarikkal, S Thomas- Nanomedicine and Tissue Engineering: State of the Art and Recent Trends, 31-82, 2016, ISBN9781771881180
- 12. **Polyuronates and their application in drug delivery and cosmetics,** R Augustine, S S Bhavana Venugopal, N Kalarikkal, S Thomas, Green Polymers and Environmental Pollution Control, 239-269
- 13. **Biopolymer-Application in Nanoscience and Nanotechnology,** Sneha Mohan, Oluwatobi S. Oluwafemi, Nandakumar Kalarikkal, Sabu Thomas and Sandile P. Songca (2016).
- 14. Recent Advances in Biopolymers, Dr. Farzana Khan (Ed.), InTech, DOI:10.5772/62225.
- 15. Monitoring and separation of food-borne pathogens using magnetic nanoparticles.

Robin Augustine, Ann Rose Abraham, Nandakumar Kalarikkal, Sabu Thomas, In Book: Novel Approaches of Nanotechnology in Food, pp.271-312(2016)

- 16. **Environmental Fate of Zinc Oxide Nanoparticles: Risks and Benefits**, N. Kalarikkal et. al., DOI: 10.5772/65266, In book: Toxicology New Aspects to This Scientific Conundrum
- 17. Development of ceramic-controlled piezoelectric devices for biomedical applications
 A Mayeen, N Kalarikkal, DOI:10.1016/B978-0-08-102203-0.00002-0, In book:
 Fundamental Biomaterials: Ceramics, pp.47-62

Books Edited-32









M. Sc. & M. Phil. Theses guided

- X-ray diffraction studies on KTP crystals- M. Sc thesis(1994)
- Dielectric and heat capacity studies on selected Tungsten Bronze Ferroelectric Ceramics M. Phil thesis (1996)
- X-ray diffraction studies on selected Barium Sodium Niobate ceramics- M. Phil thesis (1998)
- > X-ray diffraction studies on Sr_{1-x}Ba_xNb₂O₆ ceramics- M. Sc thesis(1998)
- Photoluminescence of Barium Modified Strontium Cerate-M. Sc thesis(2003)
- Synthesis and characterization of Gd³⁺ modified Sr₂CeO₄ ceramic phosphor- M. Phil thesis(2004)
- Sol-gel synthesis and structural characterization of Nano Nickel Ferrite systems- M. Phil thesis(2005)
- Synthesis and Characterization of (Sr_xBa_{1-x})₂ CeO₄ ceramic phosphors-M. Phil thesis (2006)
- Synthesis and investigation of structural phase transition in Strontium Barium Niobate Ceramics- M.Phil thesis(2006)
- Sol-gel synthesis, structural and nonlinear optical characterizations of nanomultiferroic Yttrium Ferrite-M. Phil thesis(2009)
- Synthesis, structural and thermal characterization of Sol-gel derived nanomultiferroic YFe₂O₄-M.Phil thesis(2009)
- Synthesis and characterization of Cd_xZn_{1-x} quantum dots-M. Sc thesis(2010)
- Synthesis and investigations on Lithium Sodium Niobate Nanoferroelectics-M. Phil thesis(2010)
- Copper LASER plasma generation and characterization- M. Phil thesis(2010)
- Synthesis and investigations on Cobalt-Zinc Nanoferrites- M. Phil thesis(2010)
- Synthesis and characterization of Zinc Oxide Nanoparticles-M. Phil thesis(2011)
- Design, synthesis and characterization of Phospholipid-Silver nanoconjugates for biomedical applications- M. Phil thesis(2012)
- ➤ Nanocrystaline multiferroic Bi₁-xPrxFe₂O₃(X=0,0.3) systems studied by different characterization techniques and positron annihilation spectroscopy-M. Sc thesis(2013)
- > Investigations of multiferroic core-shell nanostructures-M. Phil thesis(2014)
- Dynamics of Plasma Plume during LASER ablation of metal targets in ambient air and stationary liquid media-M. Phil thesis(2014)
- Development of Silver Nanoparticles Decorated Graphene Quantum Dots for Tailored Applications-M. Phil thesis(2018)
- Engineered Molybdenum Disulphide hybrid nanostructures for watersplitting and waste water treatment Applications-M. Phil thesis(2019)
- Novel Synthesis of Graphene, Vertical Graphene and Graphene Quantum Dots byLaser Ablation Technique-M. Phil thesis(2019)
- Silver Nanowire Decorated Cobalt Oxide Nano-cone Array for Gas Sensing Applications- M. Phil thesis(2019)
- Engineered Nanohybrid TiO₂ decorated MoS₂ Microspheres for Waste Water Treatment Applications under Solar Irradiance-M. Phil thesis (2019)

- Pristine, Single atom and Hetero atom Doped Reduced Graphene Oxide for Dye Detection-M. Phil thesis (2019)
- Study of Urea Oxidation Electrocatalysis using Mn doped Ni-Co Oxide Catalysts-M.Phil thesis (2020)
- Sensing of Biomolecules (Catechol and Nitrobenzene) by Two Dimensional MoS₂ and C₁₈ Cyclocarbon: Insights from First principle Density Functional Theory Simulation-M. Phil thesis (2020)

Ph. D. Theses guided

Titles of Ph. D theses supervised

- 1. Metal oxide based hybrid nanostructures for water purification-Shabina Kappadan- Thesis submitted (**2020**)
- 2. Development and characterization of engineered metal and metal oxide nanoparticle/ cluster polymer composite for prosthodontic application-Dr. Sandhya Gopalakrishnan (2019)
- 3. Dietary Supplements and Nutraceutical formulations-Rajakumari R (2019)
- 4. Studies on Electrospun Chitosan and its Composites-Merin Sara Thomas (2019)
- 5. Electroactive polymer ceramic nanocomposites for multifunctional applications- Anshida Mayeen (2018)
- 6. Synthesis and characterizations of metal and metal oxide nano particle cluster polymer composites for their uses in craniofacial prosthesis and prosthodontic and dental applications-Dr. Indu Raj (**2018**)
- 7. Recyled polyurethane toughened epoxy resin-Arunima R (2018)
- 8. Development of Hybrid Multiferroic Materials for Tailored Applications-Ann Rose Abraham (2018)
- 9. Polyhedral OligmericSilsesquioxane (POSS) Filled Natural Rubber Composites-Lakshmipriya S (**2018**)
- 10. Graphene and Carbon Nano tube Reinforced Elastomer Nanocomposites, Srinivasarao Yaragalla (**2016**)
- 11. Graphene Based Hybrid Materials for Tailored Applications-El Hadji Mamour Sakho (International student) (2016)
- 12. Investigation on Nano sized Multiferroic BiFeO₃-NaNbO₃ ceramics and its polymer composites-Rehana P Ummer (**2016**)
- 13. Design and development of polymer nanocomposites for biomedical applications- Robin Augustine (**2015**)
- 14. Synthesis and characterisation of selected nanomultiferroic systems-Raneesh B (2013)
- 15. Multifunctional studies on pure and Fe modified Yttrium chromite nanosystems-Shiji Krishnan (2013)
- 16. Investigations on selected nanomagnetic systems-Jeevan Job Thomas (2012)
- 17. Preparation and characterization of selected luminescent nanoparticles-Nuja S John (2012)

- 18. Synthesis and spectroscopic studies pure and rare earth doped Sr₂CeO₄ phosphors Seema R **(2011)**
- 19. Investigations on structural and electrical properties of selected ferroelectric ceramics-Jaimon Yohannan (2001)

Titles of Ph. D theses co-supervised

- 1. Nanoparticles for Improved Plant growth and secondary metabolite production- Rakhimol K. R-Thesis submitted (**2020**)
- 2. Investigations on Ag/TiO₃/GQD Nanoparticles based PMMA-polymer nanocomposites for multifunctional Applications -Bhavitha K B-Thesis submitted (**2020**)
- 3. Role of Multiwall Carbon Nanotubes on the Morphology, Rheology and Properties of Natural Rubber/Polypropylene Blends-Sharika T Nair (**2019**)
- 4. Studies on Electrospun Chitosan and its Composites-Merin Sara Thomas (2019)
- 5. Microbiological Application of Nanostructured Materials-Snigdha S (2019)
- 6. Development of carbon nanotube based polymer blend nanocomposites for electromagnetic interference shielding- P Mohammed Arif (**2018**)
- 7. Study on Polyvinyl Chloride/Graphene Nanocomposites-Akhina H(2018)
- 8. Noble metal nanostructures and hetero atom doped graphene hybrids for multifunctional applications-Anju K. Nair **(2017)**
- 9. Ionic liquid modified carbon nanotube based styrene butadiene rubber nanocomposites-Jiji Abraham (2017)

Conferences/Workshops/Seminars Convened

- 1. 3-Days International Workshop on 'Catalysis and Applications (IWCA-2020)' under the SPARC scheme of MHRD-Govt. of India organized jointly with Ben Gurion University of the Negev & Ariel University, Israel and Mahatma Gandhi University 28thto 30thJanuary 2020-(**Convenor**)
- 2. 3-Days International Workshop on 'Medical Imaging and Nanotechnology Latest Trends (IWMN-2020)' under the SPARC scheme of MHRD-Govt. of India organized jointly with Nanyang Technological University (NTU), Singapore and Mahatma Gandhi University held during 9th -11th January2020-(**Convenor**)
- 3-Days International Workshop on 'Polymer Nanocomposites and Applications (IWPNA)' under the SPARC scheme of MHRD-Govt. of India organized jointly with North Carolina State University & Kansas State University, USA held during 30thDecember 2019- 1st January 2020-(Convenor)

- 4. 3-Days International Workshop on 'Engineered Polymer Nanocomposites' under the SPARC scheme of MHRD-Govt. of India organized jointly with UNIVERSITÉ DE MONTPELLIER & Université of Lorraine, France and Mahatma Gandhi University held during 5th -7th December 2019-(Convenor)
- 5. International Conference on Highly Correlated Systems IMHCS 2017, 27-29 March 2017-(Convener)
- 6. International conference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications (ICM-2016) 13-15 May2016-(**Convener**)
- Fourth International Conference on Nanomedicine and Tissue Engineering (ICNT 2016) 12-14 August 2016(Convenor)
- 8. Second International Conference Advanced Materials for Power Engineering (ICAMPE 2016) 11-13 November 2016.
- 9. Fourth International Conference on Polymer Processing and Characterization (ICPPC 2016) 9-11 December 2016(**Co-convenor**)
- 10. First International Conference on Advanced Materials for Power Engineering , 11-13 December 2015(**Convener**)
- 11. International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites (ICNPM 2015) on 13, 14 and 15 November 2015(**Convener**)
- 12. World Congress on Microscopy: Instrumentation, Techniques and Applications in Life Sciences and Materials Sciences(**Co-Convener**)
- 13. Fourth International Conference on Natural Polymers (ICNP 2015) : 10-12 April 2015 (**Co-Convener**)
- 10. Second International Conference on Nanostructured Materials and Nanocomposites (ICNM 2014): 19 21 December 2014(**Co-Convener**)
- 11. International Conference on Plasma & Nanotechnology and 29th National Symposium on Plasma Science & Technology (PLASMA-2014)(**Convener**).
- 12. Third International Conference on Polymer Processing and Characterization(ICPPC 2014) : 11-13 October 2014(**Co-Convener**)
- 13. First World Conference on Fracture and Damage Mechanics (FRACTURE 2014): 9-11 August 2014(**Co-Convener**)
- 14. Third International Conference on Recycling and Reuse of Materials (ICRM 2014): 11-13 April 2014 (**Co-Convener**)
- 15. International Conference on Advanced Polymeric Materials (ICAPM 2013) : 11-13 October 2013(**Co-Convener**)
- 16. Third Euro-India International Conference on Nanomedicine and Tissue Engineering (ICNT 2013) : 9-11 August 2013(**Co-Convener**)
- 17. FirstInternationalConferenceonAdvancedNanocompositeforConstruction Materials: 12-14 March 2013 (**Co-Convener**)
- 18. India-Israel Meet on Material Science and Nanoscience, February 1,2013.
- 19. Third International Conference on Natural Polymers (ICNP2012): 26-28 October 2012. (**Co-Convener**)
- 20. First Indo- US International Conference on Polymers for Packaging Applications (ICPPA 2012) 31st March 2nd April 2012.(**Co-Convener**)

- 21. Third International Multicomponent Polymer Conference (ICMPC-2012) 23-25 March-2012.(Co-Convener)
- 22. International Conference on Nanomaterials: Synthesis, Charecterisation and Application (ICNM-2012) February- 1-3, 2012.(**Co-Convener**)
- 23. Second International Conference on Nanomaterials: Synthesis, Characterization and Applications-ICNM 2012 held during 12-15 January 2012(**Convener**)
- 24. International conference on Nanoscience and nanotechnology-2011, November, 12-15, 2011.(Co-Convener)
- 25. International conference of waste management-2011(Co-Convener)
- 26. International Conference on Composites and Nanocomposites (ICNC-2011).
- 27. International Rubber Conference (IRC-2010) Mumbai, India.
- 28. International Conference on Nano Materials: Synthesis, Characterization and Applications-ICN 2010 held during 27-29 April 2010(**Co-Convener**)
- 29. International Conference on Nanomedicine (ICNM-2010)(Co-Convener)

Details of talks delivered in national and international seminars/conferences/ workshops during the last 5 years

- 1. Invited talk in the National Level Webinar on Recent Trends in Science, Technology and Socio-Economy' organized by the Department of Applied Sciences and Humanities, Universal Engineering College, Vallimattom, Thrissur, Kerala held during 3-7 August 2020
- 2. Invited talk on, Polymer Nanocomposites for tailored Applications' in the Two Week Online Faculty Development Programme on, Nanocomposites and Nanomaterials & it's Charcaterization' held during 8-20 June 2020 by the Department of Mechnaical Engineering, Vimal Jyothi Engineering College, Jyothi Nagar, Kannur, Kerala
- 3. Keynote Speaker in the Waste Eng 2018 conference held at Prague, Czech Republic held during 1-6 July 2019
- 4. Invited talk in the Certificate Program in Advances in Basic Sciences and Biosciences at Kerala University of Health Sciences, Thrissur, Kerala, India, on 22 November, 2019
- 5. Key note Lecture on the Topic ,Novel Engineered Carbon hybrid structures for Energy' at the International Conference on Frontiers of material Science (FOMS-19)' from 16-18 December, 2019
- 6. Chaired the session and delivered the Plenary Talkat the International Conference on, Going Global in Higher Education (GGHE-2019)' held at Govt. Arts and Science College, Karwar, Uttara Kannada, Karnataka, India, on 28 February and 1 March, 2019
- 7. Talk at a National Seminar entitled ,Advancement in Science and Technology' organized by the Departments of Physics and Chemistry, Govt. College of Arts, Science and Commerce, Khandola Marcela-Goa, India on 9 February, 2019
- 8. Invited Talk at International Conference on Advances in Materials Science held at Sree Sankara College, Kalady, Kerala, India on 24-25 October 2018
- 9. Talk entitled ,Novel Carbon Nanostructured Materials for Energy Applications ,at Indian Institute of Space Science and Technology, Thiruvananthapuram, Kerala, India on 10-13 October 2018

- 10. Plenary Talk for Three-day International Conference on ,Advances in Materials Science and Engineering for Societal Applications (NMSE 2018)' organised by the Departments of Physics and Chemistry, Sri Ramakrishna Engineering College, Vattamalaipalayam, Coimbatore, India from 18-20 July, 2018
- 11. Invited talk at International Conference of Advanced Nanostructures (ICAN 2018) at Catholicate College Pathanamthitta, Kerala, India from 12-14 March, 2018
- 12. Delivered the National Science Day Oration at Sree Narayana College,Cherthala, Kerala, India on 28 February, 2018
- 13. Resource Person on the National Seminar on, Tissue Interactions to Biomaterials' at Pushpagiri Research Centre, Kerala, India on 23 February2018
- 14. Talk on, Carbon Nanostructures for Energy Applications' at Department of Instrumentation, CUSAT, Kerala, India on 16th February 2018
- 15. Guest Speaker for INN International Conference / Workshop on ,Nanotechnology and Nanomedicine' NTNM 2017 heldat
- 16. Keynote speaker in the International Conference on Polymer Processing and Characterization-ICPPC 2017 held at Gdansk University of Technology, Gdansk, Poland during 27-29 September 2017
- 17. Invited speaker in the DAE SSPS 2018 held at Bhabha Atomic Research Centre, Mumbai in December 2017
- 18. Keynote speaker in the National Conference on ,Impact of Nanotechnology in the arena of Fibre Manufacturing and Textile Finishing for the Production of Multi-Functional Fibers/Fabrics for High-End Applications' held at K. S. Rangasamy College of Technology, Tamil Nadu during 30th and 31st March 2017
- 19. Resource Person for the participants of conducted by the Human Resource Development Centre University of Kerala, Kerala, India on 27 November, 2017.
- 20. Resource person for the Two day National Conference on ,Nano Materials And Nano Electronic Devices for Energy Applications' conducted by the Department of Physics and Electronics, Indian Academy Degree College Autonomous, India on 28July,2017
- 21. Invited Speaker for the one-day National Conference on ,Nanomaterials for Biomedical Application' at Yenepoya University and Yenepoya Research Centre, Mangalore, India on 16, March 2017
- 22. Invited talk on ,Synthesis of Nanostructured Materials and Applications' at Department of Physics, Kannur University, Swami Anandatheertha Campus, Payyannur, Kerala, India on 03 March 2017
- 23. Lecture for the National level conference RTMS-2017 on, Introduction to Nanoscience and nanotechnology` on 21, February, 2017 held at
- 24. Talk on 'Bioengineered Matrices for The Treatment of Partial Thickness of Wounds– Nano That Heals and Its Commercialization Aspects' at KETCON-2017 organised by APJ Abdul Kalam Technological University and Kerala State Council for Science, Technology and Environment (KSCSTE) held at Mar Athanasius College for Engineering, Kothamangalam, Kerala, India on 13,14 January 2017
- 25. Invited speaker for the Silver Jubilee Research Conference on ,Study of matter using intense radiation sources and under extreme conditions' organized by UGC-DAE CSR-Indore, India during 3-6 November 2016

- 26. Invited Talk at the Researcher Links Workshop on 'Nano Biomaterials for Water Purification' held at Mahatma Gandhi University, Kottayam, Kerala, India, from 12-16 December, 2016
- 27. Invited talk in the National Conference on Study of Matter using Intense Radiation Sources and Under Extreme Conditions held at UGC-DAE Consortium for Scientific Research on 3-6 November 2016
- 28. Resource Person for TEQIP-II sponsored faculty development programme on ,Nano Technology-Basics and Applications ,at NIT Calicut, Kerala, India on 29 July, 2016.
- 29. Invited Talk on ,Advanced Nanostrutured Materials and Applications, at Department of Physics, CMRT Technical Campus, Hyderabad, India on 11-13, March 2016
- 30. Invited talk in the Workshop on ,Nano Technology Perspectives in Homoeopathy-Characterization of Homoeopathic Drugs at School of Nano Science and Technology, held at National Institute of Technology, Kozhikode, Kerala on 10 March 2016
- 31. Invited talk on ,National Seminar On Frontiers Of Materials Science ,at St Joseph's College, Devagiri ,Calicut, Kerala, India held on 24-25 February 2016
- 32. Invited talk in the International Conference on ,Advances in Applied Mathematics Material Science And Nanotechnology For Engineering And Industrial Applications' at Federal Institute of Science and Technology, Angamaly held during 7-9 January 2016
- 33. Invited Plenary talk in the international meeting ,Defining Success Factors for Science and Technology Park in OIC member States' at Rasht, Gulian, I. R. of Iran during 18-20 December, 2015
- 34. Invited talk in the National Seminar on Advanced Materials at Sri Vyasa NSS College, Wadakkancheri, Kerala, India during 29-30 October 2015
- 35. Invited talk in the International Conference on 'Recent Innovations in Tissue Engineering' held at Pushpagiri Institute of Medical Sciences, Thiruvalla ,Kerala, India on 09 October, 2015.

Membership in Professional bodies

- > The Indian Physics Association- Life Membership
- > Plasma Science Society of India-Life Membership
- > Academy of Physics Teachers-Annual

Other information

- External examiner for M. Sc, M. Phil and Ph. D theses evaluator for various Universities in India and abroad.
- Resource person for many workshops, conferences and seminars organized by different colleges, refresher courses, national and international workshops/conferences organized by School of Pure and Applied Physics, International and Inter University Centre for Nanoscience and Nanotechnology of Mahatma Gandhi University and other institutions in India andabroad.
- Reviewer for many international journals.

Hobbies

Music, nature, classical art forms, books, movies, travel, photography, videography, cooking, gardening and bird watching