

CURRICULUM VITAE



Prof. Dr. SABU THOMAS

*(PhD, FRSC, FEurASc, WAAS Fellow, DSc (UL,France), DSc (UBS,France)
DSc(SFU,Russia))*

**Chairman, Trivandrum Engineering Science & Technology Research Park
(TrEST Research Park)**

&

**Director, School of Energy Materials
Director, School of Nanoscience and Nanotechnology
Director, International and Inter-University
Centre for Nanoscience and Nanotechnology
Mahatma Gandhi University, Kottayam, Kerala, India**

Former Vice Chancellor

**Mahatma Gandhi University, Kottayam, Kerala, India
Former Director, Professor, School of Chemical Sciences**

Mahatma Gandhi University, Kottayam,

Founder, School of Polymer Science and Technology

**Mahatma Gandhi University, Kottayam, Kerala, India -686 560
Kerala, India -686 560**

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Nationality: Indian, Date of Birth: 14th March 1960

Website : [www.sabuthomas.com& www.mgu.ac.in](http://www.sabuthomas.com&www.mgu.ac.in)
Google Scholar : <https://scholar.google.co.in/citations?user=74VyKRYAAAAJ>
Scopus : <https://www.scopus.com/authid/detail.uri?authorId=7404654376>
Researcher id : <http://www.researcherid.com/rid/G-7310-2016>
Orchid-id : 0000-0003-4726-5746
Vidwan : <https://vidwan.inflibnet.ac.in/profile/21829>



Brief Overview of Prof. Sabu Thomas

- **Nationality:** Indian
- **Date of Birth:** 14 March 1960

Major Roles

- **Distinguished Scientist | Professor | Academic Leader | Administrator | Polymer Science & Nanotechnology Pioneer | Research Innovator | Educator | International Collaborator | Editor | Mentor |**

Key Research Areas

Nanomaterials & Polymer Nanocomposites | Polymer Blends & Fiber Filled Polymer Composites | Ageing, Degradation & Elastomer Crosslinking | Pervaporation, Sorption, Diffusion | Interpenetrating Polymer Systems | Recyclability and Reuse of Waste Plastics and Rubbers | Dual Porous Nanocomposite Scaffolds | Nanocomposites applied in Electronics, Water Purification, Energy Storage, Packaging, EMI Shielding, Tissue Engineering | Smart and Stimuli-Responsive Polymers | Biodegradable and Bio-based Polymers | Polymer Membranes for Gas Separation | Conductive Polymers and Sensors | Polymer Nanofibers and Electrospinning | Polymer Hydrogels for Biomedical Applications | Self-Healing Polymers | 3D Printing of Polymer Nanocomposites | Polymer Surface Modification and Functionalization | Sustainable Polymer Composites | Flame Retardant Polymer Materials | Polymer-based Drug Delivery Systems | Photonic and Optoelectronic Polymers | Advanced Polymer Coatings and Thin Films

Academic & Research Profile

- 1800+ scientific publications (since 1986)
- 200+ book chapters, 45+ review papers
- 15 patents granted, 5 filed
- Supervised 131 Ph.D. theses (112 national, 20 international)
- Research projects funded: 40, totaling Rs. 2298.62 lakhs
- H-index: 156 (Google Scholar), 130 (Scopus), 111 (Web of Science)
- Total citations: 118,448+ (Google Scholar)
- Edited 263 books

Major Research Areas:

Nanomaterials, Polymer Blends, Fiber-Filled Polymer Composites, Polymer Nanocomposites, Ageing and Degradation, Pervaporation, Sorption and Diffusion, Interpenetrating Polymer Systems, Recyclability and Reuse of Waste Plastics and Rubbers, Elastomer Crosslinking, Dual Porous Nanocomposite Scaffolds, Nanocomposites for Electronic Applications, Water Purification, Energy Storage, Packaging, EMI Shielding, Tissue Engineering.

Research Papers

Articles

(2024) **25+** (2023) **65** + ; (2022) **49**; (2021) **66** ; (2020) **94**; (2019) **83**; (2018) **70**; (2017) **73**; (2016) **55**; (2015) **42**; (2014) **40**; (2013) **31**; (2012) **27**; (2011) **14**; (2010) **35**; (2009) **17**; (2008) **14**; (2007) **14**; (2006) **28**; (2005) **17**; (2004) **13**; (2003) 36; (2002) 15; (2001) 14; (2000) 24; (1999) **25**; (1998) **16**; (1997) **23**; (1996) **18**; (1995) 17; (1994) **11**; (1993) **8**; (1992) **7**; (1992) **15**; (1991) **-1**; (1990) **-1**; (1988) ; (1987) **-7**; (1986) **-4**;

Reviews paper in International journals :80

Book chapters-200 +. BOOKS 260+

Executive Summary

- Over 35 years of dedicated academic and administrative service, primarily at Mahatma Gandhi University (MGU), Kerala, India.
- Currently Chairman of the Trivandrum Engineering Science & Technology Research Park (TrEST Research Park), providing leadership in research and innovation.
- Director of the School of Energy Materials, the School of Nanoscience and Nanotechnology (SNSNT), and the International and Inter University Centre for Nanoscience and Nanotechnology (IIUCNN), overseeing academic and research administration.
- Former Vice Chancellor of Mahatma Gandhi University, demonstrating experience in top-level university leadership.
- Held directorship of the School of Chemical Sciences and served as Honorary Director of IIUCNN before assuming current roles.
- Member of key governance bodies such as the Academic Council, Executive Council (Syndicate), Senate, and Planning Board.
- Longstanding involvement in curriculum development and academic quality assurance through Boards of Studies and the Internal Quality Assurance Cell (IQAC).
- Began career as Lecturer and progressed to Professor in Chemical Sciences, showcasing strong teaching and research background.
- Chairman of the Mahatma Gandhi University Innovation Foundation, fostering entrepreneurship and innovation development.
- Recognized for consistent contributions to higher education, research excellence, and institutional governance in India.

Academic Summary

Prof. Dr. Sabu Thomas is a globally recognized scientist and academic leader with over 35 years of service at Mahatma Gandhi University (MGU), Kottayam, Kerala, India. He currently serves as Chairman of the Trivandrum Engineering Science & Technology Research Park (TrEST) and Director of the School of Energy Materials, the School of Nanoscience and Nanotechnology, and the International and Inter-University Centre for Nanoscience and Nanotechnology. As a former Vice Chancellor, he played a key role in elevating MGU to one of the best universities in India. His significant contributions to polymer science and nanotechnology transformed the School of Chemical Sciences at MGU into the country's leading department in polymer science. Building on this success, he founded and initiated the School of Polymer Science and Technology. His extensive research spans nanomaterials, polymer blends, polymer nanocomposites, elastomers, green nanotechnology, fiber-filled composites, interpenetrating polymer networks, nanomedicine, and sustainable materials. With over 1,800 publications, 200 edited books, and 15 patents, his work has earned an h-index of 156 and more than 118,000 citations. He holds honorary Doctor of Science degrees from four leading universities in France and Russia and has received numerous prestigious awards, including the Fellowship of the Royal Society of Chemistry and the Dr. APJ Abdul Kalam Award for Scientific Excellence. Prof. Thomas has supervised over 130 doctoral candidates who now occupy influential positions globally, and his international reputation is further established through visiting professorships, invited lectures, and global collaborations.

Major Achievements/Positions

- Chairman, Trivandrum Engineering Science & Technology Research Park
- (TrEST Research Park)
- Vice Chancellor, Mahatma Gandhi University, Kottayam
- Professor in Charge of Vice Chancellor and Pro-Vice Chancellor
- Chairman, Mahatma Gandhi University Innovation Foundation (MGUIF)
- Full Professor from 25/03/1998 onwards
- Fellow of the Royal Society of Chemistry, London
- Foreign Fellow of European Academy of Sciences
- Fulbright Fellow, USA
- Professor at University of Lorraine, Nancy, France.
- Distinguished Visiting Professor, University of Johannesburg
- Chief Editor, Nanostructures and Nano-Objects, Elsevier
- Total Number of Awards and Honours - 44
- **h-index- 156 (google scholar) 130 (Scopus), 111 (Web of Science)**
- Total number of publications- 1848
- **Total number of citations- 109898 + (google scholar)**
- Patents 16 (granted- 15, filed -3)
- Edited Books- 230+
- Ph.D. theses supervised **131**- (National) 110; (International) 20
- Projects- 40; Funds Received- Rs.2298.62 lakhs
- Cited in the list of **Most Productive Researchers in India- 5th Position, 2008**
- Listed in the Most Cited Researchers in Materials Science and Engineering by Elsevier Scopus Data 2016
- Ranked as **Best Material Scientist 2nd** in India and **239th in World** by Research.com-2022
- Cited among **top 2% Scientists** in the world by Stanford University Professors in **2020 & 2021, 2022, 2023** Ranked
- **2,615th** in the list of the world's best scientists by Stanford University
- **83rd** in the list of the world's best scientists (in polymer science Stanford University
- **2nd best scientist in India in the field of polymer science by Stanford University**
- **1st in Kerala in all sciences in the list of the world's best scientists Stanford University**
- Ranked in the scientific evaluation by German based European Science Evaluation Centre. **(2022)**
 - 1st in the Kerala state, 19th in India, 236th in Asia, 2611st in the World
- 2nd Best Materials Scientist in India 2022, 2023 (Researcher.com)
- Materials Science in India Leader Award in 2022 & 2023
- Careers360 2nd Faculty Research Award' for the Most Outstanding Researcher in the country in the field of Materials Science 240
- The Vice Chancellor Distinguished Award: Global Excellence and Stature 4.0- University of Johannesburg
- Professor Fryderyk Staub Golden Owl Award, bestowed by the World Academy of Materials and Manufacturing Engineering. 2024

- 2,221th in the list of the world's best scientists by Stanford University
- 10th in the list of the world's best scientists Subfield - polymer science Stanford University and 1st best scientist in India in the field of polymer science by Stanford University
- Doctortae from 5 universities including University of Loorraine, University in Lorient, France, Siberian Federal University, Satbayev University Kazakhstan and IMT mines Albi
- Distinuished Alumni IIT Kharagpur December 30th 2024
-

MAJOR SCIENTIFIC FIELDS OF INTEREST:

Rubber / Rubber Blends: Miscibility, phase separation and crystallization of polymer blends; morphology; mechanical properties; rheology; fracture toughness; compatibilization of immiscible blends; biodegradable polymer blends; polymer crystallization, morphology control, and phase behavior.

Fiber-Filled Rubber Composites: Short natural and synthetic fiber-filled thermoplastics, thermosets, rubbers; polymer-fiber interfacial adhesion; fiber surface modification; characterization; hybrid composites; trans-crystallization; cellulose nanocomposites and biocomposites; natural fiber-based sustainable composites.

Nanomaterials and Rubber Nanocomposites: Clay, silica, mica and carbon black filled thermoplastics and rubbers; effect of coupling agents; polymer-filler interactions; inorganic/organic hybrid nanocomposites; carbon-based nanofillers such as graphene oxide and carbon nanotubes for multifunctional applications.

Ageing and Degradation: Thermo-oxidative ageing; high-energy radiation ageing; ozone cracking; environmental degradation; ion-beam and electron beam irradiation.

Pervaporation Phenomena, Sorption, and Diffusion: Membrane-assisted sorption; diffusion; transport of liquids and gases through polymer membranes, blends, and composites; pervaporation through polymer membranes; polymer membranes for gas separation and fuel cell applications.

Interpenetrating Polymer Systems: Natural and synthetic rubber and epoxy-based semi-interpenetrating networks.

Recyclability and Reuse of Waste Plastics and Rubbers: Recycling of waste plastics and rubbers; reuse of latex waste as potential filler for thermoplastics and rubbers; green synthesis methods for polymer nanocomposites using renewable resources; development of bio-based and biodegradable polymer composites for sustainable applications.

Elastomer Crosslinking: Double network in elastomers; synthesis of accelerators; vulcanization; self-healing polymers and materials with enhanced durability.

Dual Porous Nanocomposite Scaffolds for Tissue Engineering: Engineering of dual porous scaffolds by electrospinning; advanced polymer nanofibers and electrospinning techniques for biomedical and filtration uses; polymer hydrogels.

Polymer Nanocomposites for Electronic Applications: Conductive polymer composites for flexible electronics and sensors; polymer-based photonic and optoelectronic materials for

light-based technologies; polymer coatings and thin films for corrosion resistance and functional surfaces.

Water Purification: Removal of toxic materials and dyes using biomaterials; bio-based and biodegradable polymer composites for environmental remediation.

Sensing Applications: Flexible polymeric strain sensors; solvent sensors; electromagnetic interference (EMI) shielding; polymer sensors for environmental and biomedical monitoring.

Additional Applications: Flame retardant polymer composites for safety-critical applications; advanced polymer-based drug delivery systems and biomedical devices; thermal, mechanical, and barrier property enhancement of food packaging materials.

EDUCATIONAL QUALIFICATIONS

S.No	Qualification	University	Year	Subject (s)/ Topics (s)
1.	Post Doctoral Fellow	Katholieke University, Leuven, Belgium	2004	Polymer Blends
2.	Post Doctoral Fellow	Katholieke University, Leuven, Belgium	1996	Polymer Blends
3.	Post Doctoral Fellow	Macromol. Sci. Eng. Research Centre, Laval University, Quebec, Canada	1989	Polymer Blends
4.	Ph.D(<i>Doctor of Philosophy in Engineering</i>)	Indian Institute of Technology, Kharagpur	1987	Polymer Blends Thermoplastic Elastomers from PVC/Copolyester EVA/PP blends
5.	B. Tech (<i>Bachelor of Technology</i>)	University of Cochin	1983	Polymer Science & Rubber Technology
6.	B.Sc (<i>Bachelor of Science</i>)	University of Kerala	1980	Chemistry (Main), Physics & Maths (Sub)

ADMINISTRATIVE EXPERIENCE IN INDIA

S.No	Post	Organization/ university	Duration	
			From(Date)	To(Date)
	Chairman	Trivandrum Engineering Science & Technology Research Park An Institution of Government of Kerala TrEST Research Park	August 2023	Till Date
1.	Director	School of Energy Materials	Sept.2019	Till Date
		School of Chemical Sciences	01/11/2010	31/12/2013
		International and Inter University Centre for Nanoscience and Nanotechnology	28/03/2009	11/09/2015
			02/02/2016	11/10/2017
2.	Chairman,	NIL	N.A	N.A

	Board of Studies			
3.	Member, Board of Studies	School of Chemical Sciences	07/12/1987	Till date
		St. Berchmans College, Changanassery (Autonomous College)	27/10/2014	Till date
4.	Dean of Faculty	Faculty of Technology and Applied Sciences	04/05/2010	03/05/2012
5	Member of Academic Council	Mahatma Gandhi University	11/02/2011	03/05/2012
6.	Member of Executive Council	Syndicate Member, Mahatma Gandhi University, Kottayam	11/02/2011	03/05/2012
7	Member of Professional/Acad emic Bodies	Senate Member, CUSAT	14/02/2011	13/02/2015
			23/05/2015	Till date
		Director, IQAC, MG University	31/10/2015	27/09/2017
		Vice Chairman, IQAC, MG University	27/09/2017	31/08/2018
8	Others	URC Member, Mahatma Gandhi University	08/01/2016	Till date
		Research Council Member, SreechitraThirunna Institute for Medical Sciences and Technology, Trivandrum	26/10/2015	Till date
		Academic Committee Member - IUCNMD	7/12/2015	Till date
		Planning Board Member -MGU	23/03/2011	30/8/2017

ACADEMIC/TEACHING EXPERIENCE&RESPONSIBILITIES
(IN CHRONOLOGICAL ORDER FROM LATEST TO OLDEST)

S.No	Post	Organization/ University	Duration	
			From(Date)	To(Date)
1.	Vice Chancellor	Mahatma Gandhi University. Kottayam	28/05/2019	27/05/2023
2.	Chairman, Mahatma Gandhi University Innovation Foundation(MGUIF)	Mahatma Gandhi University. Kottayam	01/01/2021	27/05/2023
3.	Professor in Charge of Vice Chancellor	Mahatma Gandhi University. Kottayam	01/09/2018	27/05/2019
4.	Pro Vice-Chancellor	Mahatma Gandhi University. Kottayam	31/08/2017	31/08/2018
5.	Director	School of Enegry Materials	10/1/ 2019	Till Date
6.	Director	School of Chemical Sciences, Mahatma Gandhi University. Kottayam	01/11/2010	31/12/2013
7.	Honorary Director	International and Inter UniversityCenter for	28/03/20 09	11/09/2015

		Nanoscience and Nanotechnology, Mahatma Gandhi University. Kottayam	02/02/2016	Till date
8.	Professor	School of Chemical Sciences, Mahatma Gandhi University, Kottayam, Kerala	25/03/1998	Till now
9.	Regional Director	School of Technology and Applied Sciences, Kottayam (Additional Charge)	16/06/ 1994	15/06/1996
10.	Reader	Mahatma Gandhi University, Kottayam, Kerala	28/12/1992	24/03/1998
11.	Lecturer	Mahatma Gandhi University, Kottayam, Kerala	07/12/1987	27/12/1992

INVOLVEMENT WITH FORMULATION OF ACADEMIC PROGRAMMES:

S.No	Nomenclature of Innovative Academic Programmes Formulated	Date of Approval by Academic Council	Introduction
1.	M.Tech in Nanoscience and Nanotechnology	06/05/2017	-
2.	Integrated M.S-Ph.D programme in Nanoscience and Nanotechnology	10/01/2013	2014
3.	Integrated M.Sc-Ph.D programme at School of Chemical Sciences	15/03/2012	2012
4.	M.Tech Polymer Science and Technology at School of Chemical Sciences	15/03/2012	2012
5.	M.Phil Nanoscience and Nanotechnology	31/07/2010	2011
6.	M.S programme in Nanoscience and Nanotechnology	31/07/2010	2011

INDUSTRIAL POSITIONS:

- 1983 June - 1984 June - Rubber Production Officer, Bata India Ltd., 24- Parganas, West Bengal
- 1987 June - 1987 December - Technical Officer, Bayer India Ltd., Thane, Kolshet Road, Bombay

AWARDS HONOURS AND PRIZES :

1. **Universite Laval Post-Doctoral Fellowship, 1989-1991**
2. **Fellow of the Royal Society of Chemistry, London, Chartered Chemist, C Chem FRSC, 2000**
3. Katholieke University Visiting Research Fellowship, Leuven, Belgium, 1996-1997
4. Katholieke University Visiting Research Fellowship, Leuven, Belgium, 1997-1998
5. CNRS Research Fellowship, Thie, France, 2002
6. Prof. Sukumar Maithy National Award for Best Polymer Researcher, 2007

7. Listed in the Panel of most Productive Researchers in India (5th Position), 2008 by National Institute of Science, Technology, and Development, New Delhi
8. **Distinguished Professorship Award, Josef Stefan Institute, Slovenia, 2010**
9. Fellow of the Royal Society of Chemistry, London, FRSC, 2012
10. **Awarded Bronze Medal of Chemical Research Society of India (CRSI), 2013**
11. **Awarded Materials Research Society of India Award (MRSI), 2013**
12. **Awarded Society For Educational & Scientific Research. (SESR) Nanotech Scientist Award- 2014**
13. **Awarded Doctorate Honoris Causa-LIMATB, University of South Brittany, France 2015**
14. **Awarded Loyalty Award “International Materials Technology Conference Exhibition” May 2016 & Honourable member of IMTCE, Loyalty Award Club (Membership Number-IMTCE-LC-017)**
15. **Awarded. APJ Abdul Kalam Award for Scientific Excellence –2016**
16. **Mahatma Gandhi University- Award for Outstanding Contribution–Nov. 2016**
17. **Awarded Lifetime Achievement Award, Indian NanoBiologists 2017**
18. **Awarded Doctorate Honoris Causa-Université de Lorraine France 2017**
19. **Fullbright scholarship-Nehru –Fulbright fellowship for 2017**
20. **National Education Leadership Award – 2017 for Excellence in Education**
21. **Won 6th contest of "mega-grants". The grant competition of the Government of the Russian Federation (Ministry of Education and Science of the Russian Federation) designed to support research projects implemented under the supervision of the world's leading scientists as Leading Scientist-2017**
22. **‘Faculty Research Award’ of India’s brightest minds in the field of academic research. “Most outstanding Researcher” in the field of Materials Science, 2018**
23. **Trila Award – Academician of The Year, 2018**
24. **H.G. Puthenkavu Mar Philoxenos Memorial Best Scientist Award 2018**
25. **Professor@Lorraine, University of Lorraine, Nancy France, 2018**
26. **“C.N.R Rao Award Prize Lecture In Advanced Materials” by Materials Research Society of India (MRSI) -2019**
27. **"Fellow of International Academy of Physical Sciences" 24th International Conference (CONIAPSXXIV) at Chaudhary Charan Singh University, Meerut, UP- 2019**
28. **Foreign Fellow of the European Academy of Sciences (EurASc)-2019**
29. **National Researcher Award -DST Nanomission-2020**
30. **Honourary Professorship from Siberian Federal University- May 2020**
31. **Fellow of International Association of Advanced Materials, FIAAM (Sweden) of year 2020**
32. **Bailey Medal Award**
33. **Kairali Lifetime Research Award 2021 by Kerala Government.**

34. Ranked 114th in the list of the world's best scientists that has been compiled by Stanford University in the US. Figures in the list as the 2nd best scientist in India in the field of polymer science.
35. Cited among top 2% Scientists in India by Stanford University Professors in 2020 & 2021 Ranked 114 in Polymer science 2021
36. Ranked 1st in the Kerala state, 19th in the Country and 236th in Asia and 2611 in the World by German based "European Science Evaluation Centre"
37. Reviewers Committees member in the World Academy of Materials and Manufacturing Engineering and the Association of Computational Materials Science and Surface Engineering, Poland.
38. Invited for Honorary Professor of the Academic Union Oxford with life membership in the Academic Union and the Honorary Professors Expert Council.
39. Distinguished Visiting Professor, University of Johannesburg
40. 2nd Best Material Scientist in India and 239th in World Ranking by Research.com
41. Cited among top 2% Scientists in the world by Stanford University Professors in 2020 & 2021 and 2022 Ranked
 - 2,615th in the list of the world's best scientists
 - 83rd in the list of the world's best scientists (in polymer science.)
 - 2nd best scientist in India in the field of polymer science.
 - 1st in Kerala in all sciences in the list of the world's best scientists
42. Ranked in the scientific evaluation by German based European Science Evaluation Centre. (2022)
 - 1st in the Kerala state,
 - 19th in India
 - 236th in Asia
 - 2611st in the World
43. National award under the Innovation in green polymeric materials and product category at the 11th National Petrochemical Awards held at New Delhi on Sept 27, 2022.
44. 2nd Best Materials Scientist in India (Researcher.com), Materials Science in India Leader Award in 2022 & 2023
45. 2nd Best Materials Scientist in India 2022, 2023 (Researcher.com)
46. Materials Science in India Leader Award in 2022 & 2023
47. Dr S Radhakrishnan Education Excellence Award-Indian Institute of Oriental Heritage Feb 24th 2023
48. Alper-Doger Scientific Index a German Based World Scientist and University Rankings (Sort by last 6 years H Index). Prof Sabu Thomas was ranked 1st in 3rd in India, 18th in Asia and 71st in the world in Chemical Sciences and 1st in University 20th in India, 87th in the world for Natural Sciences. AD Scientific Index
49. **Careers360 2nd Faculty Research Award' for the Most Outstanding Researcher in the country in the field of Materials Science 240**
50. **The Vice Chancellor Distinguished Award: Global Excellence and Stature 4.0- University of Johannesburg**

- 51 Professor Fryderyk Staub Golden Owl Award, bestowed by the World Academy of Materials and Manufacturing Engineering. 2024
- 52 Clarivate India Research Excellence - Citation Awards 2023 Recognizes Prof. Sabu Thomas with Lifetime Achievement Award.
- 53 Distinguished Alumni Award 2024 - IIT Kharagpur
- 54 Awarded Doctorate Honoris Causa-IMT MINES Albi January 28th 2025
- 55 Retired Teachers Excellence Award-2025
- 56 World Academy of Art & Science (WAAS) Fellow

Visiting Professorship Abroad:

Year & Duration	Institution & Location
2002 Sep–Nov	CNRS Lab, Laboratoire de Recherche sur les Polymères, Thiais, Paris, France
2003 Sep–Nov	Lab. of Macromolecular Structural Chemistry, Katholieke University, Leuven, Belgium
2004 Apr–Jul	Lab. of Macromolecular Structural Chemistry, Katholieke University, Leuven, Belgium
2005 Apr–Jun	Polymers Nanotextures & Nanocomposites, Centre de Recherche, Orléans, France
2005 Jun–Jul	Laboratoire Polymères, University de Bretagne Sud, Lorient, France
2006 May–Jun	Beijing University of Chemical Technology, China
2006 Oct–Dec	IPF Dresden, Germany
2007 Apr–Jun	Paris 12 University, Paris, France
2008 Apr–May	University du Maine, Le Mans, France
2009 Apr–Jun	University Paris 12, Créteil, France
2010 Oct–Nov	Josef Stefan Institute, Slovenia
2010 Dec	University Technology Mara (UiTM), Malaysia
2011 Apr–Jun	University of Strasbourg, Strasbourg, France
2011 Jul	University of Burgos, Burgos, Spain
2011 Dec	University Technology Mara (UiTM), Malaysia
2012 Feb	Changwon University, Pusan, Korea
2012 Apr–May	Université Lorraine, Nancy, France
2012 Jun	University of Strasbourg, France
2012 Jul	University Paris 12, France
2013 Feb	Adam Mickiewicz University, Poznań, Poland
2013 Oct	University Technology Mara (UiTM), Malaysia
2013 Dec	University Technology Mara (UiTM), Malaysia
2014 Apr	University Technology Mara (UiTM), Malaysia
2014 Jun	Warsaw University of Technology, Warsaw, Poland
2015 Mar	LIMATB, France
2015 May	Institute of Chemistry, University of Graz, Austria

Year & Duration	Institution & Location
2015 Sep	University of Armenia
2015 Dec	Qilu University of Technology, Jinan, China
2015 Dec	INSTP Science Park Management Course, Guilan, Iran
2016 Aug–Sep	Hong Kong Polytechnic University, Hong Kong
2016 Sep	Federal University of Uberlândia, Brazil
2016 Oct	Institute of Biophysics, Russian Academy of Science, Siberian Federal University, Russia
2017 Sep	Université Lorraine, Nancy, France
2018 Jun 4–9	Siberian Federal University, Russia
2018 Oct 27–Nov 2	Siberian Federal University, Russia
2019 May 1–14	Institute Jean Lamour, Université Lorraine, Nancy, France
2019 May 1–15	University of Pau, France
2019 Jul 1–5	Siberian Federal University, Russia
2019 Jul 5–9	Institute Jean Lamour, Université Lorraine, Nancy, France
2019 Jul 12	University of Stockholm, Sweden
2019 Oct 21	IMDEA Materials Institute, Madrid, Spain
2019 Oct 23	Dept. of Aerospace Systems, ETSI Aeronautica y del Espacio – UPM, Madrid, Spain
2019 Oct 24–25	National University of Science and Technology MISIS, Moscow & Surface Phenomena Research Group, Russia
2019 Oct 29–31	Saint Petersburg State University, Institute of Chemistry, Russia
2019 Nov 1–4	Institute of Biophysics, Russian Academy of Science, Siberian Federal University, Russia
2021 Oct 1–15	Institute of Biophysics, Russian Academy of Science, Siberian Federal University, Russia
2022 Mar 1–15	Université Lorraine, Nancy, France
2022 Aug 14–25	National Research Center, Cairo, Egypt (Sweden/Egypt/India Project)
2023 Jun 1–Present	Institute Jean Lamour, Université Lorraine, Nancy, France
2022 Jun 1–Present	Saint Petersburg State University, Institute of Chemistry, Russia
2023	Saint Petersburg State University, Institute of Chemistry, Russia
2023	Laboratory of Engineering Profile, Satbayev University, Almaty, Kazakhstan
2024	Laboratory of Engineering Profile, Satbayev University, Almaty, Kazakhstan
2025,Jan	IMT Mines Albi, Albi, France
2025,Feb	Lund University, Lund, Sweden

Invited Lectureship Abroad:

- 1990 Dec – 1991 Jan – Invited speaker, several universities in Austria and Germany
- 1991 May – Jul – Invited speaker, several universities in Germany, Austria, France, Switzerland, Italy, Netherlands, Belgium
- 1993 Oct – Nov – Invited speaker, several universities in Singapore and Taiwan
- 1999 Feb – Mar – Invited speaker, several universities in Germany, Austria, and France
- 1999 May – Jun – Invited speaker, several universities in Germany
- 2000 Jul – Aug – Invited speaker, several universities in USA
- 2000 Oct – Nov – Invited speaker, several universities in France, Germany, Belgium
- 2001 Feb – Invited speaker, several universities in Australia
- 2001 Mar – Invited speaker, several universities in Malaysia
- 2001 Jul – Invited speaker, several universities in Singapore
- 2002 May – Jun – Invited speaker, several universities in Belgium, France, Germany
- 2002 Sep – Nov – Invited speaker, several universities in Belgium, Germany, France
- 2003 Nov – Invited speaker, several universities in Belgium, Germany, Japan
- 2004 Mar – Invited speaker, several universities in Belgium, France, Germany
- 2005 Jun – Invited speaker, several universities in Belgium, France, Germany, Austria
- 2005 Sep – Invited speaker, several universities in China
- 2005 Oct – Invited speaker, several universities in South Africa
- 2006 Apr – Invited speaker, several universities in China
- 2007 Apr – Invited speaker, several universities in Europe
- 2008 Apr – Invited speaker, several universities in Europe
- 2009 Apr – Invited speaker, several universities in France, Slovenia, Croatia
- 2010 Nov – Invited speaker, universities in Croatia and Slovenia
- 2011 Jun – Invited speaker, universities in France
- 2012 Feb – Invited speaker, universities in Korea
- 2012 Apr – Invited speaker, University of Strasbourg, France
- 2013 Feb – Invited speaker, Adam Mickiewicz University, Poznan, Poland
- 2014 Mar – Plenary speaker, University of Basra, Iraq
- 2014 Apr – Invited speaker, University Technology Mara, Malaysia
- 2014 May – Invited speaker, Warsaw University of Technology, Poland
- 2014 Jul – Invited speaker, Durban University of Technology, South Africa
- 2014 Jul – Invited speaker, CSIR, Port Elizabeth, South Africa
- 2014 Jul – Invited speaker, Cape Peninsula University of Technology, South Africa
- 2015 Mar – Invited speaker, LIMATB, University of South Brittany, France
- 2015 Mar – Invited speaker, University of Strasbourg, France
- 2015 Mar – Invited speaker, Institute for Polymer Research Dresden (IPF), Germany
- 2015 May – Invited speaker, University of Graz, Austria
- 2015 Jun – ICMAT & IUMRS-ICA 2015, Plenary, Singapore
- 2015 Aug – AFFTECH 2015 / NANOMED 2015 / NANOBIOTECH 2015, Dalaman, Turkey
- 2015 Sep – Invited speaker, University of Armenia
- 2015 Oct – Plenary talk, ICCBN 2015, Durban, South Africa
- 2015 Dec – Invited speaker, Qilu University of Technology, Jinan, China
- 2015 Dec – Invited speaker, INSTP Science Park Management Course, Guilan, Iran
- 2016 Apr – Plenary speaker, XXI IUPAC CHEMRAWN, Rome, Italy
- 2016 Apr – Invited speaker, TWAS Research Grants Conference, Trieste, Italy
- 2016 May – Plenary speaker, WasteEng2016, Albi, France

- 2016 Jun – Invited speaker, King Mongkut's University of Technology, Bangkok, Thailand
- 2016 Aug–Sep – Invited speaker, Hong Kong Polytechnic, Hong Kong
- 2016 Sep – Invited speaker, Federal University of Uberlandia, Brazil
- 2016 Oct – Invited speaker, Institute of Biophysics, Russian Academy of Science, Siberia
- 2016 Oct 23–26 – Plenary lecture, International Rubber Conference (IRC 2016), Kitakyushu, Japan
- 2017 Apr 23–27 – Keynote lecture, Eurofillers Polymer Blends 2017, Greece
- 2017 Jun 7–9 – Keynote lecture, ICNP 2017, Rio de Janeiro, Brazil
- 2017 Jun 21–23 – Plenary speaker, ICNF 2017, Braga, Portugal
- 2017 Jul 19–20 – Plenary speaker, MPIC 2017, Malaysia
- 2017 Sep – Keynote speaker, 13th Global Rubber Conference, Kuala Lumpur, Malaysia
- 2017 Sep – Invited speaker, University of Lorraine, France
- 2017 Nov 21–23 – Keynote speaker, WOBIC 2017, Malaysia
- 2018 Jan 7–9 – Plenary speaker, B4T Conference, Kochi, India
- 2019 May 3 – Plenary speaker, 2nd Franco-Indian Workshop on Polymers, France
- 2019 Jul 11 – Keynote speaker, IUPAC Congress, Paris, France
- 2019 Oct–Nov – Invited speaker, IMDEA, UPM (Spain), MISIS, St. Petersburg, SFU (Russia)
- 2019 Nov 22–25 – Keynote, ICFM & MFMS & INM 2019, Chongqing, China
- 2021 Oct 11 – Keynote, IV International Conference “Biotechnology of New Biomaterials” (MGU & SFU) Russia
- 2022 Mar 15 – Invited speaker, Lorraine University of Excellence (LUE), France
- 2022 May 19 – Invited talk, Stockholm University, Sweden (Sweden–India project)
- 2022 Aug 14–25 – Invited speaker, 3rd International Conference for Membrane Technology, Cairo, Egypt
- 2022 Dec 3 – Invited speaker, Lund University, Sweden
- 2022 Dec 9–17 – Invited speaker, Siberian Federal University, Russia
- 2022 Dec 17–29 – Invited speaker, Satbayev University, Almaty, Kazakhstan
- 2023 May 6–7 – Keynote, First International Biomaterials Conference, Qatar University, Qatar
- 2023 Jun 7–9 – Keynote, Milan Polymer International Conference, Italy
- 2023 Jun 14 – Invited talk, Milan Polytechnic, Italy
- 2023 Jul 17–18 – Invited talk, IMT Mines Albi, France
- 2023 Jul – Invited speaker, University of Lorraine, Nancy, France
- 2023 Aug 1 – Invited talk, Lanzhou University, China
- 2023 Aug 25–27 – Invited speaker, 3rd International Conference for Membrane Technology, Cairo, Egypt
- 2023 Sep 13–15 – Invited speaker, MPIC 2023, Malaysia
- 2023 Dec 3 – Invited speaker, Workshop on Membranes, Lund University, Sweden
- 2023 Dec 10 – Invited speaker, ICPCNB 2023
- 2024 May 20–23 – Keynote, AMME-bio 2024, Wisła Malinka, Poland
- 2024 May – Lecture Series, Jagiellonian University, Krakow, Poland
- 2024 May – Invited speaker, University of Silesia, Katowice, Poland
- 2024 May – Invited speaker, Jerzy Haber Institute of Catalysis, Krakow, Poland
- 2024 May 22 – Invited speaker, University of Johannesburg, South Africa
- 2024 Jun 20–22 – Guest of Honor, FCT-2, Colombo, Sri Lanka
- 2024 Aug – Invited speaker, 3rd International Conference for Membrane Technology, Cairo, Egypt
- 2024 Sep – Invited speaker, St. Petersburg University, Russia

- 2024 Oct–Nov – Invited speaker, Satbayev University, Kazakhstan
- 2024 Nov – Invited speaker, RUDN University, Russia
- 2025 Feb – Invited speaker, Lund University, Sweden
- 2025 May 28–30 – Invited guest, 35th Anniversary, Department of Infectomics & Molecular Pathogenesis, Cinvestav, Mexico
- 2025 Jun 3–6 – Invited participant, Chemistry, Process, and Materials Sciences (CPM) Conference 2025, Baku, Azerbaijan (Co-organized by UFAZ, ASOIU, and international partners)

NATIONAL CONFERENCES ATTENDED-SELECTED

1. **APT-2008 (Advances in Polymer Technology)** – Conducted by Rubber Technology, CUSAT, Kerala, India, 2008
2. **International Seminar on Nanotechnology and Nanomaterials – Current Status and Emerging Trends (Nanotech 2010)** – 2010
3. **DST-INSPIRE Science Camp** – Resource Person, IIT Delhi, 28 Dec 2012
4. **National Conference on Composites (INCCOM-11)** – Invited Talk, Amrita Viswavidyapeetham, Coimbatore, 3 Nov 2012
5. **International Rubber Conference and IRRDB Meetings** – Attendee, Hotel Samudra, Kovalam, 2012
6. **IVth International Conference on Advanced Nanomaterials (ANM 2012)** – Invited Speaker, IIT Madras, 2012
7. **National Seminar on Advanced Polymers (SCIENTIA-2012)** – Plenary Speaker, MG University, College of Engineering, Thodupuzha, 2012
8. **Seminar on Emerging Trends in Nanotechnology and Microbiology** – Plenary Speaker, St. Thomas College, Pala, 2012
9. **Environmental Conservation and Living** – Resource Person, Nirmala College, Kuravilangad, 11 Nov 2013
10. **XVth Refresher Course in Chemistry** – Resource Person, Nirmala College, Muvattupuzha, 9 Nov 2013
11. **Refresher Course in Nano Science** – Resource Person, UGC-Academic Staff College, University of Kerala, 2013
12. **Advances in Nanoscience and Nanotechnology, NIIST** – Invited Speaker, 23 Mar 2013
13. **National Seminar on Green Materials** – Plenary Speaker, Bishop Moore College, Mavelikara, 2013
14. **XVth Refresher Course in Chemistry** – Resource Person, UGC-Academic Staff College, University of Kerala, 2013
15. **NANO INDIA 2013** – Special Invitee, National Institute for Interdisciplinary Science and Technology, 2013
16. **National Conference on Advanced Materials** – Invited Speaker, PSN College of Engineering and Technology, Tamil Nadu, 2013
17. **IIIrd National Conference on Advanced Materials** – Invited Speaker, PSN College of Engineering and Technology, Tirunelveli, 2013
18. **Inaugural Ceremony of Chemistry Association, Sree Narayana College** – Invited Lecture, Nattika, Thrissur, 15 Oct 2014
19. **National Seminar on Nanotechnology and Renewable Energy** – K.E College, 30–31 Oct 2013
20. **National Seminar on Current Trends in Chemistry (CTric 2014)** – Cochin University of Science and Technology, 2014

21. **National Seminar on Perspectives in Material Science** – Marthoma College of Science and Technology, Ayur, 7 Nov 2014
22. **National Seminar on Recent Approaches in Biochemical Research (RABR-2014)** – Department of Biotechnology, Thiruvananthapuram, Kerala, 2014
23. **National Seminar on Recent Advances in Nanoscience (RANSS 2014)** – Auxilium College, Vellore, Tamil Nadu, 21–22 Nov 2014
24. **Advances in Biotechnology 2014** – Cochin University of Science and Technology, 15–16 Dec 2014
25. **National Seminar on Nanochemistry and Nanobiotechnology (NANO-CHEMBIO 2014)** – Resource Person, St. Thomas College, Palai, 9 Oct 2014
26. **New Paradigms in Chemistry (AbInitio, AdFuturum)** – Resource Person, St. Mary's College, Sulthan Bathery, 10 Mar 2014
27. **Fostering Scientific Temper – Trends and Opportunities in Chemistry** – Plenary Lecture, St. Berchmans College, Changanacherry, 28 Feb 2014
28. **Emerging Trends in Nanoscience and Technology** – Keynote Address, Newman College, Thodupuzha, 28 Feb 2014
29. **Emerging Trends in Polymeric Materials** – Plenary Lecture, Christian College, Chengannur, 24 Jan 2014
30. **National Seminar on Advanced Topics in Chemistry (ATC 2015)** – UGC Sponsored, Sree Narayana College, Nattika, 19–20 Aug 2015
31. **Recent Advances in Spectroscopy: A Chemical and Biological Perspective – I** – Newman College, Thodupuzha, 14–15 Sep 2015
32. **Recent Advances in Spectroscopy: A Chemical and Biological Perspective – II** – Newman College, Thodupuzha, 14–15 Sep 2015
33. **Green Nanotechnology in Material Engineering & Energy Applications (TEQIP)** – Resource Person, College of Engineering, Adoor, 18 Dec 2015
34. **Green Technology for Green Environment** – Plenary Talk, Sreenarayanan Mangalam College, Ernakulam, 4 Dec 2015
35. **Nanotechnology & Space Applications (AICTE Sponsored)** – Plenary Talk, Amaljyothi College of Engineering, Kanjirapalli, 27 Apr 2015
36. **Polymers & Its Applications** – Resource Person, Indian Naval Academy, Ezhimala, 25 Mar 2015
37. **New Frontiers in Nanotechnology & Material Science** – Plenary Talk, Sree Narayana College, Chengannur, 20 Mar 2015
38. **Interaction Programme for PhD Scholars** – Resource Person, UGC-Academic Staff College, Calicut, 16 Mar 2015
39. **National Seminar on Emerging Nanomaterials (NSEN-2015)** – Plenary Lecture, Devamatha College, Kottayam, 1 Jan 2015
40. **Emerging Nanomaterials (NSEN-2015)** – Deva Matha College, Kuruvilangad, 6 Jan 2015
41. **International Conference on Understanding Contemporary India (ICCS)** – Mahatma Gandhi University, 14–15 Jan 2016
42. **International Conference on Advances in Applied Mathematics, Materials Science and Nanotechnology for Engineering and Industrial Applications (IC-AMMA-2K16)** – 2016
43. **Federal Institute of Science and Technology (FISAT)** – Jan 2016
44. **Recent Advances in Material Sciences** – Government College, Kottayam, Jan 2017
45. **India-UK Joint Workshop on Nano-Biomaterials for Water Purification** – Expert Mentor, MG University, Kottayam, 12–16 Dec 2016
46. **Inauguration of Centre for Nanotechnology and Smart Materials** – Chief Guest, Viswajyothi College of Engineering & Technology, Muvattupuzha, 29 Nov 2016
47. **National Conference on Biopolymers & Green Composites (BPCG 2016)** – Plenary Lecture, CBPST-CIPET, Kochi, 29 Sep 2016

48. **International Conference on Functional Materials** – Plenary Lecture, PSN College of Engineering and Technology, Tirunelveli, 10 Sep 2016
49. **National Science Day Celebrations** – Chief Guest, Sree Narayana College, Chengannur, 25 Feb 2016
50. **KSCSTE Sponsored National Seminar on Emerging Trends in Nanocomposites** – Keynote Address, St. Thomas College, Palai, 12 Oct 2017
51. **National Conference on Recent Advances in Applications of Macromolecular Materials (RAAMM 2017)** – Plenary Lecture, Gandhigram Rural Institute, Dindigul, 2 Mar 2017
52. **National Conference on Recent Trends in Biomaterials (BIOMEET 2017)** – Plenary Talk, Bishop Moore College, Mavelikara, 17 Feb 2017
53. **National Conference on Nanomedicine: Current Scenario and Future Opportunities** – Plenary Talk, SN College, Chengannur, 17 Feb 2017
54. **Dalton's Conclave & Award Ceremony 2016–2017** – Chief Guest/Keynote Speaker, Catholic College, Pathanamthitta, 23 Jan 2017
55. **Art Festival Inauguration** – Chief Guest/Keynote Speaker, Travancore Medical College, Kollam, 15 Jan 2017
56. **International Conference on Polymer Science and Technology (MACRO 2017)** – Invited Talk, 8 Jan 2017
57. **International Conference on Chemistry and Physics of Materials (ICCPM 2018)** – St. Thomas' College, Thrissur, 17–19 Sep 2018
58. **National Conference on Emerging Frontiers in Chemical Science (EFCS2018)** – Plenary Talk, Farook College, Kozhikode, 24 Nov 2018
59. **International Conference on Advances in Materials Science (ICAMS 2018)** – Plenary Talk, Sree Sankara College, Kalady, 24 Oct 2018
60. **National Seminar on Recent Trends in Nanotechnology (KSCSTE)** – Plenary Lecture, Newman College, Thodupuzha, 15 Oct 2018
61. **National Seminar on Recent Advances in Materials Science** – Resource Person, NSS Hindu College, Changanacherry, 6 Sep 2018
62. **Bishop Moore College (DBT Star College Scheme)** – Plenary Talk, Mavelikara, 22 Mar 2018
63. **International Conference on Advanced Nanostructures (ICAN-2018)** – Plenary Talk, Catholicate College, Pathanamthitta, 14 Mar 2018
64. **National Seminar on Recent Trends in Material Science and Technology** – Plenary Talk, St. Berchmans College, Changanassery, 7 Feb 2018
65. **Biomaterials for Tomorrow (B4T) Conference** – Invited Talk on Biobased Composites, Kochi Marriott Hotel, 8 Jan 2018
66. **Sastrapadham (Science Enrichment Programme)** – Plenary Talk on Nanotechnology: Boon or Bane, St. Berchmans College, Changanassery, 20 Jan 2019
67. **3rd International Conference on Optoelectronic and Nano Materials for Advanced Technology (icONMAT-2019)** – Invited Speaker, CUSAT, Cochin, 5 Jan 2019
68. **iNNCOTECH Annual Symposium** – Tata Chemicals Innovation Center, Pune, 28 Feb 2019
69. **ICRACM-2019 Conference** – Keynote Speaker, IIT (BHU), 25–28 Feb 2019
70. **International Conference on Chemistry and Physics of Materials** – JNCASR, Bangalore, 20–22 Feb 2019
71. **International Conference on Advances in Polymer Science and Technology (APT)** – Keynote Speaker, 11 May 2023

Research Students - Ph.D. Thesis:

- Ph.D. Thesis completed(National) –110(International) -20
- Current Ph.D. students- 2(MGU) +8 (International)

➤ Post Docs completed-25, Current Post Docs-2

Alumni -Ph.D Scholars-India

	Name of the Student	Thesis Title and Year of Award
1.	Dr. Alex T. Koshy	Studies on blends of natural rubber & Ethylene-vinyl copolymer with special reference to effects of crosslinking systems (1992)
2.	Dr. Kuruvilla Joseph	Short sisal fiber reinforced LDPE composites (1993)
3.	Dr. Siby Varghese	Studies on short sisal fibre reinforced Natural rubber composites (1994)
4.	Dr. G. Unnikrishnan	Transport of organic liquids through crosslinked Natural rubber membranes (1997).
5.	Dr. Zacharia Ommen	Compatibilising effect of Natural rubber-g-Poly (Methyl methacrylate) in Heterogeneous Natural rubber/Poly (Methyl methacrylate) blends (1997)
6.	Dr. P.P Lizymol	Binary and ternary blends Based on Poly (Vinyl chloride), Poly (Ethylene-co-vinylacetate) and Poly (Styrene-co-acrylonitrile) (1998)
7.	Dr. Jayamol George	Short pineapple leaf fibre reinforced low density Polyethylene composites (1998)
8.	Dr. N. Radhakrishnan Nair	Studies on depolymerized Natural rubber (1998)
9.	Dr. Ashaletha	Studies on thermoplastic elastomers from Natural rubber/Polystyrene and Natural rubber/Polystyrene/Natural rubber-graft-Polystyrene blends (1998)
10.	Dr. Jyothi T. Varkey	Studies on Natural Rubber (NR) and Styrene Butadiene Rubber (SBR) Latices and their blends (1998)
11.	Dr. T. Johnson	Transport of small molecules through Natural rubber, Epoxidised Natural rubber and Natural Rubber/epoxidised Natural rubber blends (1998)
12.	Dr. Hima Varghese	Studies on Acrylonitrile Butadiene Rubber/Poly (Ethylene-co-vinyl/Acetate) (NBR/EVA) blends (1999)
13.	Dr. Soney C. George	Transport phenomena through elastomers and blends (1999)
14.	Dr. Snoopy C. George	Thermoplastic elastomers from isotactic Polypropylene/Nitrile rubber blends: Effect of compatibilisation and dynamic vulcanization (1999)
15.	Dr. G. Kalaprasad	Studies on short sisal/glass hybrid fibre reinforced low Density Polyethylene composites (2000)
16.	Dr. R. Prasanth Kumar	Short natural fibre reinforced elastomer composites from sisal fibre and Styrene-Butadiene Rubber (2000)
17.	Dr. C. Radhesh Kumar	Thermoplastic elastomers from Nylon/Acrylonitrile-co-butadiene Rubber blends: The role of compatibilisation and dynamic vulcanisation on blend properties (2000)
18.	Dr. Aji. P. Mathew	Interpenetrating polymer networks based on Natural rubber and Polystyrene (2000)
19.	Dr. M.S Sreekala	Oil palm fibres: A potential reinforcement in phenolic resins (2001)
20.	Dr. Moncy Mathew	Thermoplastic elastomers from blends of Styrenic plastics and Nitrile rubber (2002)

21.	Dr. C.G. Bandobadhyaya	Dynamic mechanical analysis of multiphase Polymer systems: Application of models (2002)
22.	Dr. P.V. Joseph	Studies on short sisal fibre reinforced isotactic Polypropylene composites (2002)
23.	Dr. Abi Santosh Aprem	Studies on the effect of 1-phenyl-2, 4-dithiobiuret as a binary accelerator in elastomers (2002)
24.	Dr. LalyPothan	Banana fibre reinforced Polyester composites (2003)
25.	Dr. K.C Manikantan Nair	Short Sisal fibre reinforced Polystyrene composites (2003)
26.	Dr. George Mathew	Utilisation of Natural Rubber latex waste as a potential filler in synthetic elastomers and plastics (2003)
27.	Dr. Asha. E. Mathai	Transport phenomena through membranes of Nitrile Rubber and its blends (2004)
28.	Dr. Josephine George	Compatibilisation of high density Polyethylene/Nitrile Rubber blends (2004)
29.	Dr. Susan Joseph	Compatibilisation of Polystyrene/Polybutadiene blends (2004)
30.	Dr.V.G .Geethamma	Short coir fibre reinforced natural rubber composites (2005)
31.	Dr. Moly K A	Thermoplastic elastomers from linear low density Polyethylene (LLDPE) and Ethylene vinyl acetate copolymer (EVA) blends (2006)
32.	Dr. Bejoy Francis	Studies on Epoxy resin systems modified with Ether ketone/Ether sulfone containing polymers (2006)
33.	Dr. Ranimol Stephen	Studies on the properties of Natural Rubber, Carboxylated Styrene Butadiene Rubber lattices and their blends with micro and nano fillers (2006)
34.	Dr. Seena Joseph	Banana fibre: A potential reinforcement in Phenol Formaldehyde resin (2006)
35.	Dr. Maya Jacob	Studies on Lignocellulosic fibre reinforced Natural Rubber composites (2006)
36.	Dr. Sobha V Nair	Polyamide/Polystyrene blends: The role of reactive compatibilisation on blend properties (2007)
37.	Dr. Seno Jose	Compatibilisation of Polypropylene/high density Polyethylene and Polypropylene/Polyamide 12 blends (2007)
38.	Dr. MariesIdicula	Banana and Sisal fibre reinforced Polyester composites (2008)
39.	Dr. Anil Kumar S	Pervaporation diffusion and transport through polymer (2008)
40.	Dr. Biju John	Morphology and properties of high density Poly ethylene/ethylene Vinyl Acetate co-polymer blends (2009)
41.	Dr. CibiKomalan	Thermoplastic elastomers from Nylon copolymer (PA6, 66) and Ethylene propylene diene rubber (EPDM) blends: Effect of compatibilisation and dynamic vulcanization (2008)
42.	Dr. Selvin Thomas	Polymer Nanocomposites based on Polystyrene and Ethylene vinyl acetate copolymers (2008)
43.	Dr. Aju Joseph	Crystallization, morphology and ultimate properties of Polypropylene based Thermoplastic elastomers (2008)
44.	Dr. Jesmy Jose	Reaction induced phase separation of epoxy/ Styrene co-Acrylonitrile blends: Morphology, structure and properties (2009)
45.	Dr. Indose Aravind	Miscibility, phase behaviour, mechanics and viscoelastic behaviour of new multi component polymer systems (2009)
46.	Dr. Sherly Annie Paul	Banana fiber reinforced polypropylene commingled composites (2009)

47.	Dr. Mary Kutty	Study on accelerators in the vulcanisation of elastomers (2009)
48.	Dr. Raju Thomas	Miscibility, phase behaviour morphology and mechanical properties of liquid rubbers toughened epoxy resin (2009)
49.	Dr. Roslin Abraham	Studies on ceramic polymer composites (2010)
50.	Dr. Shaji Joseph (2010)	Oil palm fiber reinforced natural rubber and nitrile rubber composites (2010)
51.	Dr. P. C. Thomas	Studies on the properties of nitrile rubber nanocomposites (2010)
52.	Dr. Meera A.P.	Effect of spherical and layered type fillers on the morphology and physicochemical properties of Natural rubber nanocomposites (2010)
53.	Dr. Jayanarayanan K	Studies on microfibrillar based composites (2011)
54.	Dr. Indira K.N	Studies on fibre reinforced polymer composites (2011)
55.	Dr. Uma Devi	Pineapple leaf/ glass hybrid fibre reinforced Polyester composites (2011)
56.	Dr. Viju Susan	Toughening of epoxy resins using liquid rubbers (2011)
57.	Dr. Anil Kumar P.V.	Diffusion and transport character of EPDM and its blends with HDPE (2012)
58.	Dr. Jyothish Kumar P	Developments of high performance epoxy resin/engineering thermoplastic blends (2012)
59.	Dr. M. Kannan	Studies on thermoplastic polyurethanes (Segmented P U) based blends (2012)
60.	Dr. Eldho Abraham	Studies on bionanocomposites (2013)
61.	Dr. Poornima Vijayan	Role of nanofillers on processing, morphology and properties of epoxy/carboxyl terminated poly (butadiene-co-acrylonitrile) blends (2013)
62.	Dr. Hanna J. Maria	Effect of nanofillers on incompatible polymer blends (2014)
63.	Dr. Runcy Wilson	Morphology and transport characteristics of poly (ethylene-co-vinyl acetate)/clay nanocomposites (2015)
64.	Dr. Josmine P. Jose	Cross-linked polyethylene based inorganic hybrid nanocomposites (2014)
65.	Dr. Cintil Jose Chirayil	Development of high performance polymer nanocomposites using cellulose nanofibrils from isora fibers: A wood substitute (2014)
66.	Dr. Vishak P.M.	Preparation and characterization of bionanocomposites (2015)
67.	Dr. Sarathchandran C.	Morphology and properties of Polymer blend systems based on Epoxy systems (2015)
68.	Dr. Anu Tresa Sunny (2016)	Synthesis, Characterization and Physicochemical Studies of Copper Oxide and Calcium Phosphate Based Epoxy Nanocomposites (2016)
69.	Dr. Sajeev Martin George	Micro and nanostructured thermosetting blends from Epoxy Resin (2016)
70.	Dr. Srinivasarao Yaragalla	Graphene and Carbon Nanotube Reinforced Elastomer Nanocomposites (2016)
71.	Dr. Robin Augustine	Design and development of polymer nanocomposites for biomedical applications (2016)
72.	Dr. Ajesh K. Zachariah	Development of Organically Modified Nanoclay Filled Natural Rubber, Chlorobutyl Rubber and Their Blend Nanocomposites (2016)
73.	Dr. Jiji Abraham	Liquid Modified MWCNT Based SBR Nanocomposites
74.	Dr. Nithin Chandran	Polypropylene based blends and composites (2017)

75.	Dr. JoshyK.S	Synthesis, Characterization and Biological Evaluation of Lipid, Polymer and Lipid-Polymer Hybrid nanoparticles for Antiviral drug delivery (2017)
76.	Dr. Mohammed Arif P	Development of carbon nanotube based polymer blend nanocomposites for electromagnetic interference shielding (2018)
77.	Dr. Arunima R.	Recycled polyurethane toughened epoxy resin (2018)
78.	Dr Elizebeth Francis	Design and development of nanocomposite based on poly vinyl chloride system (2018)
79.	Dr.Deepa B	Development of Nanocomposites Based on Natural Fibres (2018)
80.	Dr Maya M G	Development of high performance graphene/Polychloroprene rubber nanocomposites (2018)
81.	Dr Preetha Balakrishnan	Starch based bionanocomposites (2019)
82.	Dr Jose James	Development of high performing interpenetrating polymer networks (2019)
83.	Dr Akhina H	Study on polyvinyl chloride/graphene nanocomposites (2019)
84.	Dr Shalini	Development of elastomeric Nanocomposites (2019)
85.	Dr.Lakshmi Priya	Polyhedral Oligomeric Silsesquioxane (POSS) Filled Natural Rubber Nanocomposites (2019)
86.	Dr Ajitha A R	Morphology and Properties of Poly (trimethylene terephthalate)/Polypropylene/Carbon Nanotube Blend Nanocomposites (2019)
87.	Dr.Indu V	Synthesis and characterizations of metal and metal oxide nanoparticle/cluster polymer composites for their uses in craniofacial prosthesis and prosthodontic and dental applications (2019)
88.	Dr.Sandhya P.K	Graphene/Phenol Formaldehyde Nanocomposites: Synthesis, Morphology and Properties (2019)
89.	Dr.Eldo Elias	Development of Biodegradable Polymer Nanocomposites for Various Applications (2019)
90.	Dr.Ashwathi M.K	Multiwalled Carbon Nanotube Reinforced Poly (trimethylene terephthalate) and their Blend Nanocomposites(2019)
91.	Dr.Anu	Morphology, Processing and Properties of Epoxy Resins Modified with Poly-(Styrene-co-Acrylonitrile) (SAN) and Cloisite 20A
92.	Dr.Bicy .K	Microporous Polymeric Membranes as Lithium ion battery separators
93.	Dr.Sandhya Gopalakrishnan	Development and characterization of engineered metal and metal oxide nanoparticle/ cluster polymer composite for prosthodontic application(2020)
94.	Dr Rajkumari Rajendran	Dietary Supplements and Nutraceutical formulations (2021)
95.	Dr.Merin Sara Thomas	Studies on Electrospun Chitosan and its Composites (2021)
96.	Dr.Sharika T	Role Of Multiwall Carbon Nanotubes On The Morphology, Rheology And Properties Of Natural Rubber/Polypropylene Blends. (2021)

97.	Dr Jomon Joy	Thermoplastic toughened epoxy based blends and nanocomposites (2021)
98.	Dr Shabina Kappadan	Metal Oxide Based Hybrid Nanostructures for Water Purification (2021)
99.	Dr Jessy AntoTerattil,	Synthesis and Characterization of Rubber- Carbon- Nanotube-Ionic Liquid Composites (2021)
100.	Dr Saju Daniel	Multifunctional Natural Rubber/Stearic acid modified Mg-Al Layered Double Hydroxide/ Multi walled Carbon Nanotube Hybrid Bio Nanocomposites (2021)
101.	Dr ShybiA A	Studies on Adhesives Based on Natural Rubber and Polychloroprene(2021)
102.	Dr Blessy Joseph	Engineering of Polymer Composites for Biomedical Applications (2022)
103.	Dr Abitha V K	Carbon black partitioning and its effect on properties of rubber/rubber blends, (2023)
104.	Dr Rekha Rose Koshy	Studies On Environmental Friendly Green Composites Based On Soy Protein, (2023)
105.	Dr Siji Mary	Starch Based Nanocomposites (2023)
106.	Dr Jince Thomas	Design and Synthesis High Performance Battery Materials (2023)
107.	Dr Avinash R Pai	Nanocellulose Based Sustainable Nanocomposites For Electromagnetic Interference Shielding (2023)
108.	Dr Seiko Jose	Development of bio/green composites from indian coarse wool
109.	Dr Jissy Jacob	Sustainable Poly(Lactic Acid) / Functionalized Mesoporous Silica Biocomposites For Intelligent Fish Packaging
110.	Dr Jibin K.P	Graphene Oxide Based Hybrid Rubber Nanocomposites for Engineering Applications
111.	Dr Prajitha V	Graphene Oxide/Nano Silica Hybrid Filler Reinforced Natural Rubber
112.	Dr Sisanth K.S	“Silicone Rubber-Based Nano and Micro Composites for Advanced Electronic Applications”

Alumni -Ph.D Scholars-International

1.	Dr Rose Jaquilin Puthenpurackal Joseph	Temperature-Sensitive Gel Containing Nano Encapsulated Tinospora Cordifolia Extract Using Poly (Lactic-Co-Glycolic Acid) For Diabetic Wound Healing	Walter Sisulu University, South Africa	2024
2.	Dr Remya V R	Fabrication of supertough epoxy composites nanostructured materials	Johannesburg University ,South Africa	2023
3.	Dr Jose Varghese	Epoxy composites	Johannesburg University ,South Africa	2022
4.	Dr. Ajay Vasudeo Rane	Structural, mechanical and morphological analysis of self assembled bio nanocomposites	Durban University of Technology, Durban, South Africa	2022

5.	Dr.Apparao gudi malla	Chirality and Nanoparticles Enforced Stabilization of Topological Defects in Liquid Crystals	Jožef Stefan Institute Ljubljana, Slovenia	2021
6.	Dr. Aneesa Padinjakkara	The role of modified nano fumed silica and nanocellulose in epoxy based polymer blend	Deakin University, Australia	2020
7.	Dr. Joby Jacob	Cellulose nanofibers isolation from ginger rhizomes and preparation of its nanocomposites to enhance mechanical strength and their characterization, antimicrobial activities, magnetite incorporation and copper (II) removal abilitie	PolitechnikaGdańska, Poland	2020
8.	Dr. Sajith Rahman	Development of flexible thermoplastic elastomer composition for neutron shielding applications	UniversitiTeknologi MARA, Malaysia	2020
9.	Dr.Jemy James	Refractive index engineering using polymernanocomposites.	University of South Brittany, France.	2019
10.	Dr. Sari P.S	Effect of plasma modification of Polyethylene on natural fiber composites	Czech Technical	2019
11.	Dr.PraveenKosapallyillom	Plasma modified polypropylene (PP) / Coir fibre composites for automobile applications	University of South Brittany, France.	2017
12.	Dr.Sreeraj Gopi	Research on polymer and rubber recycling.-Polymer nanomaterials, composites, nanocomposites polyurethane adhesives and foams:	Gdansk University of Technology, Poland	2017
13.	Dr.YasirBeeranPo ttathara	Graphene based Composites with Cellulose Nanofibrils for Energy storage applications	University of South Brittany, France.	2018
14.	Dr.Deepu Ambika Gopakumar	Nanocellulose Based Functional Constructs for Clean water and Microwave Suppression	University of South Brittany, France.	2018
15.	Dr.Sneha Mohan	Green synthesis, characterization and applications of CdSe based Core-shell quantum dots and silver nanocomposites	Cape Peninsula University of Technology, South Africa	2016
16.	Dr. AparnaBeena Unni	Structuration and glass transition temperature of the adsorbed polymer layer : some insights in the property deviations of the ultra-thin polymer film	University of South Brittany, France.	2016
17.	Dr.Harinarayanan Pulliyial	Plasma selective etching of polymeric materials	Jozef Ste-fan Institute, Slovenia	2016
18.	Dr.Deepalekshmi Ponnamma	Development of high performance materials based on smart elastomer nanocomposites	DeakinUniversity, Australia	2014
19.	Dr.NeethuNinan	Synthesis, characterisation and biological evaluation of tissue	University of South Brittany, France	2013

		engineering scaffolds for wound healing		
20.	Dr.Kishor Kumar Sadasivuni	Development of high performance Poly (isobutylene-co isoprene) nanocomposites for mechanical, sensing and barrier applications	University of South Brittany, France	2012

Post Doctoral Fellowos

	Name	Funding agency	Order number
1)	Dr.BindhuPanampally	DST-SERC	SR/FTP/CS-47/2006
2)	Dr. K R Chithra	DST-WoS-A	SR-WoS-A/CS 39/07
3)	Dr.Giable George	UGC-DSK	F4-2/2006(BSR)/13-462/2011
4)	Dr. Mahesh S	UGC-DSK	F4-2/2006(BSR) /13-539/2011
5)	Dr.Sreekanth J Varma	UGC-DSK	F4-2/2006(BSR) /13-959/2013
6)	Dr. Kajal Ghosal	UGC-DSK	F4-2/2006(BSR)/13/874/2013
7)	Dr. N Angulakshimi	UGC-DSK	F4-2/2006(BSR) /13-1123/2013
8)	Dr. Hanna J Maria	UGC-DSK	F4-2/2006(BSR) /13-14/0174
9)	Dr.Praveen Govind	UGC-DSK	F4-2/2006(BSR) /13-14/0435
10)	Dr. Jiya Jose	UGC-DSK	F4-2/2006(BSR)/BL /14-15/0016
11)	Dr. Obey Koshy	UGC-DSK	F4-2/2006(BSR)/PH/13-14/0052
12)	Dr.Sravanthi L	UGC-DSK	F4-2/2006(BSR)/EN/15-16/0020
13)	Dr.Asha Krishan	UGC-DSK	F4-2/2006(BSR)/EN/14-15/0030
14)	Dr.ProsenjithSaha	UGC-DSK	F4-2/2006(BSR)/CH/14-15/0113
15)	Dr.Suvendu Manna	UGC-DSK	F4-2/2006(BSR)/CH/15-16/0004
16)	Dr.Dhanya K R	M G University	Uo. No.4412/AVI/2/PDF/2016/Acad
17)	Dr.Jayalakshmy M S	UGC-DSK	F4-2/2006(BSR)/PH/15-16/0111
18)	Dr.Renji R Reghu	UGC-DSK	F4-2/2006(BSR)/CH/15-16/0203
19)	Dr.KanchanUpaadhya	SERB-NPDF	PDF/2017/000095
20)	Dr.Praveen GL	SERB-NPDF	PDF/2017/001196
21)	Dr.Sanal P Sebastian	SERB-NPDF	PDF/2016/004115
22)	Dr.Ajith	KSCITE-PDF	PDF/2016
23)	Dr Meegle Mathew	UGC-DSK	CH/19-20/0221
24)	Dr Manasa Mohan	UGC-DSK	CH/19-20/0221
25)	Dr Rajesh Baby	TARE	TAR/2021/000380

Total Projects

Sl.No	Funding agency	No :	Amount Sanctioned (in Lakhs)
1.	DST –Nano mission	2	468.01
2.	DST Department of Science & Technology	5	316.72
3.	DST-International collaboration	8	83.47
4.	AICTE(All India Council for Technical Education)	1	15.50
5.	DBT (Department of Biotechnology)	1	58.59
6.	DRDO(Defence Research and Development Organization	3	84.66

7.	UGC University Grants Commission	2	12.52
8.	MeitY (The Ministry of Electronics and Information Technology)	2	131.60
9.	KSCSTE (Kerala State Council for Science, Technology & Environment)	3	45.23
10.	ISRO (Indian Space Research Organisation)	1	10.00
11.	BRNS (Board of Research In Nuclear Sciences)	2	42.16
12.	CSIR Council of Scientific & Industrial Research	2	36.51
13.	ICMR (The Indian Council of Medical Research)	1	23.70
14.	Russian Mega grant, (206-2022)	1	950.00
15.	Industry/Consultancy, Apollo, MRF, CEAT, Novamilan, UK, Surface Treat, Czech etc etc	10	29.95
Total			2308.62

Recently Completed Projects

Sl. No.	Client /organization name	Nature of Project	Duration of project	Amount of grant (Rupees)
1	BRFST-BRNS	Novel thermoplastic elastomer composition for neutron shielding application (PI)	2016-2018	34,66,580
2	DRDO	Graphene-Silica conjugated epoxy nanocomposites for protective coating and repair applications (PI)	2018-2020	30,00,000
3	MeitY	Visvesvaraya PhD Scheme for Electronics and IT (PI)	2015-2020	89,77,800
4	CSIR	Engineering of nano-structured high performance epoxy/liquid rubber blends with controlled nanoparticle localization (PI)	2014-2017	14,92,000
5	MeitY	Development of multi walled carbon nanotube filled polycarbonate/polypropylene double percolating conductive polymer blend nanocomposites for electromagnetic interference shielding gaskets for mobile phones (PI)	2012 -2015	41,00,000
6	DST - Nanomission	Development of engineered nanostructured materials for high performance application (PI)	2010-2013	4,68,01,600
7	MRF Tyres	Miscibility, morphology and properties of NR/SBR and BR based binary and ternary rubber blends and the influence of carbon black and silica filler distribution on blend properties (PI)	2014-2016	3,00,000
8	Swedish Research Link Grant	Biobased Scaffolds, Membranes and Hydrogels for Improved Wound Healing and Bone Regeneration (BIOHEAL)- CO PI	2017	37,00,000
9	DST-Nano Mission-Govt. of India	Self assembled Nanostructured Silica -Graphene oxide core-shell particles reinforced natural rubber composites for green tyres	2017	100,20000
10	MeitY	Visvesvaraya PhD Scheme for Electronics and IT	2017	89,77,000

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Recent Project Ongoing

Academic Year Sanctioned	Name of Faculty (Principal Investigator)	Name of the Funding agency	Title of the Project	Amount Received (In Rupees)
2019	Prof. Sabu Thomas (PI)&Dr. Nandakumar Kalarikkal (Co-PI)	UGC DAE	Gamma Ray/Heavy Ion Assisted Cross linked Silicone Rubber Based EMI Shielding Materials	375000
2018	Prof. Sabu Thomas (PI)&Dr. Nandakumar Kalarikkal (Co-PI)	DRDO	Graphene-Silica conjugated epoxy nanocomposites for protective coating and repair applications	2145000
2017	Prof. Sabu Thomas (PI)	(Ministry of Education and Science of the Russian Federation) and scientists as Leading Scientist, 2017	Government of the Russian Federation	950,00,000
2019	Prof. Sabu Thomas (Co-PI)	SPARC	Bio-filler-Interfaced Electrospun PVDF Hybrid Piezoelectric Generator for Mechanical Energy harvesting	7,80,000
2019	Prof. Sabu Thomas (Co-PI)	SPARC	Study of urea oxidation electrocatalysis for energy conversion from waste	6,60,000
2019	Prof. Sabu Thomas (Co-PI)	SPARC	Vachellianilolita based biocompatible hybrid nanostructured coatings/films for seeds and fruits	6,60,000
2019	Prof. Sabu Thomas (Co-PI)	SPARC	Nanoscale contrast agents for diagnostic biomedical imaging	5,90,000
2020	Prof. Sabu Thomas (PI)	BRICS	Fabrication of three-dimensional nanocellulose based multifunctional materials for tissue engineering and regenerative medicine application	9,00,000

2020	Prof. Sabu Thomas (PI)	Apollo Tyres	"Lightweight nanocellulose / rubber hybrid nanocomposite for tyre engineering: the role of interface modification on morphology and ultimate properties"	14,55,000
2021	Prof. Sabu Thomas (PI)	CEAT Tyres	Understanding rubber-nanofiller interactions resulting in adequate reinforcement in tyre compound with special emphasis on dispersion, exfoliation and stability – Experimental and theoretical approach through material modelling	14,55,000

Recent Consultancy Projects -Ongoing

2021	Prof. Sabu Thomas (PI)	Plant Lipids, India	Quantum dots from natural resource	4,00,000.00
2021	Prof. Sabu Thomas (PI)	NOVA MILAN LTD, UK	Development of vegan leather from Pineapple leaf fibre	952308.50
2021	Prof. Sabu Thomas (PI)	NOVA MILAN LTD, UK	Development of PHA from water hyacinth fibre	298606.59
2021	Prof. Sabu Thomas (PI)	NOVA MILAN LTD, UK	Establishment for pilot plant for the extraction of water hyacinth fibre	830486.27
2021	Prof. Sabu Thomas (PI)	NOVA MILAN LTD, UK	Reverse engineering of CNSL-Epoxy resin	634383.97
2021	Prof. (Dr). Sabu Thomas (P'I)	TEPOFOL LLC, RUSSIA	Development of flame retardant polyethylene foams with green additives for thermal insulation application.	
2021	Prof. (Dr). Sabu Thomas (P'I)	Wayllaenterprise	Optimization of curing time and temperature of bio-based resin and Banana paper for making layer by layer composite for acoustics application	40000.00

a. National Research Projects/Funds:

- Completed -35
- Ongoing-5

b. International Research Projects

➤ Completed –15

➤ Ongoing- 4

c. Industry Supported Projects

➤ Du Pont, USA (completed)

➤ General Cables, USA, (completed)

➤ Harisson Malayalam, India (completed)

➤ Apollo Tyres, India (completed)

➤ MRF Tyres, India(completed)

➤ Surface Treat, Czech Republic, (completed)

➤ Plant Lipids Pvt.Ltd, India (completed)

➤ Andani Ventures (completed)

Awards and Prizes Received by the Research Group

Sl. No	Award	Authors	Paper
1.	Young Scientist Award in Kerala Science Congress, 1993 for the best paper in Engg Sciences.	S. Varghese, B. Kuriakose, S. Thomas	Effect of acetylation of sisal fiber bonding agent on mechanical properties of natural rubber/short fiber composites
2.	Young Scientist Award in Kerala Science Congress, 1993 for the best paper in natural resources utilization	K. Joseph,C.Pavithran, S. Thomas	Sisal/PE composites: Effect of fiber length orientation
3.	Shankar Lal Memorial Lecturer Award, 1993 IIT, Kharagpur	G. Unnikrishnan,S. Varghese, S. Thomas	Diffusion transport of aromatic hydrocarbon through natural rubber
4.	Best poster presentation award in Polymer'94 Vadodara, 1994.	G. Unnikrishnan, S. Thomas	Diffusion transport of aromatic hydrocarbon through natural rubber
5.	Shankar Lal Memorial Lecturer Award, 1994 IIT, Kharagpur	Z. Oommen, S. Thomas, M.R.G Nair	Compatibilizing effect of natural rubber-g-poly(methyl methacrylate natural rubber/poly (methyl methacrylate) blends
6.	Shankar Lal Memorial Lecturer Award, 1994 IIT, Kharagpur	J. George, S. Thomas, K.T. Varughese	Morphological properties of high-density polyethylene nitrile rubber blends
7.	Young Scientist Award in Kerala Science Congress, 1994 for the best paper in	V. G. Geethamma, S. Thomas	Short coir fiber reinforced natural rubber composites

	Natural Resources Utilization		
8.	Shankar Lal Memorial Lecturer Award, 1995 IIT, Kharagpur	Aji P. Mathew, S. Thomas	Transport of styrene through cross-linked natural rubber
9.	Young Scientist Award in Indian Science Congress, 1995, Calcutta for the best paper presentation in Material Science.	V. G. Geethamma, S. Thomas	Effect of Surface treatment on the properties of NR-coir composites
10.	Young Scientist Award in Indian Science Congress, 1995, Calcutta for the best paper presentation in Engineering Science	Josephine George, K.T. Varughese, S. Thomas	Impact properties of compatibilized blends of polyethylene/nitrile rubber
11.	Young Scientist Award in Indian Science Congress, 1996, Patiala, Punjab, for the best paper presentation in Material Science.	R. Asaletha M. G. Kumaran, S. Thomas	Natural rubber/polystyrene blend Interfacial activity of NR-graft-PS
12.	Young Scientist Award in Indian Science Congress, 1996, Patiala Punjab, for the best paper presentation in Material Science.	Siby Varghese, Baby Kuriakose, S. Thomas	Design & Development of electronic timer belt from NR-sisal fiber composites
13.	Young Scientist Award in Indian Science Congress, 1996, Patiala Punjab, for the best paper presentation in Chemistry.	G. Unnikrishnan & S. Thomas	Pervaporation of organic solvents through crosslinked natural rubber membranes
14.	Young Scientist Award in Kerala Science Congress, 1996 Cochin for the best paper presentation in Engineering Science.	Monsy Mathew, K.N. Ninan, S. Thomas	Development of Nitrile rubber/styrene plastics based thermoplastic elastomers
15.	Charles Goodyear Memorial Quiz Competition held at IIT, 1996, Kharagpur	R. Prasanthakumar, Josephine George	Polymer Science & Technology
16.	Best Paper Award for the Annual Conventional of Chemists, Tamilnadu	R. Prasanthakumar, S. Thomas	Sisal fiber reinforced rubber composites
17.	Young Scientist Award in Indian Science Congress, 2000, Pune for the best paper presentation in Engineering Science	Abi Santhosh Aprem, S. Thomas	Accelerated sulfur vulcanization of natural rubber using DTB/TBBS as a novel binary system

18.	Best paper award in a National Level Technical Symposium ELASTOFEST '99', held at Chennai	M. S. Sreekala, S. Thomas	Oil Palm fiber reinforced Phenol Formaldehyde composites for high impact applications: Influence of fiber surface modifications on the mechanical performance
19.	Vasudeva Award	Z. Oommen, S. Thomas	Best Project on natural resources (Investigators: Z. Oommen, S. Thomas)
20.	Second Prize in the Technical seminar CRESMER 2000 held at Chennai	Bejoy Francis, S. Thomas	Epoxy resin/engineering thermoplastic blends
21.	Young Scientist Award in Indian Science Congress, 2001, Delhi for the best paper presentation in Engineering Science	Soney C. George, S. Thomas	Molecular transport of aromatic hydrocarbons through nylon-6/ethylene propylene rubber blends: Relationship between phase morphology and transport characteristics
22.	Young Scientist Award in Indian Science Congress, 2003, Bangalore for the best paper presentation in Materials Science	Sobha V. Nair, S. Thomas	Influence of processing parameters in the phase morphology development of Nylon-6/PS blends
23.	Young Scientist Award in Indian Science Congress, 2008, Calicut for the best paper presentation in epoxy rubber blends	Jesmy Jose, S. Thomas	Epoxy/ rubber blends
24.	Academic excellence award 2009 from AKRSA, (M.G.University Unit).	JyotishkumarParameswaranpillai, S. Thomas	Thermal and mechanical properties of poly(acrylonitrile butadiene styrene)modified epoxy/amine systems.
25.	The best presentation award, UGC contest for the best paper presentation, Mamo, Calicut,2007.	JyotishkumarParameswaranpillai, S. Thomas	Morphology and thermal properties of ABS modified Epoxy/DDS blends
26.	Nominated for the Young Scientist Award, Govt of Kerala. India 2008 (Kerala Science Congress)	JyotishkumarParameswaranpillai, S. Thomas	New binary and tertiary phase morphologies in ABS modified epoxy/DDS blends

27.	Best poster award- Presented poster in Plast - India International Conference, New Delhi, 2009	JyotishkumarParameswaranpillai, S. Thomas	Complex phase separation in ABS modified epoxy/DDS blends generation of new micro and nano substructures.
28.	Best poster award- International conference, ICMST October 29-31, 2010 Trivandrum (IIST).	JyotishkumarParameswaranpillai, S. Thomas	Thermal and mechanical properties of poly(acrylonitrile butadiene styrene)modified epoxy/amine systems.
29.	Selected as an invited speaker for the "Polymer Conference for Young Researchers (PCYR-14)" held at CSIR-NIIST	DeepalekshmiPonnamamma, S. Thomas	Elastomer nanocomposites
30.	Best poster award, International Conference on Membranes (ICM-2013)	Robin Augustine, S. Thomas	Tissue engineering
31.	Best poster presentation at Second International Conference on Nanomaterials: Synthesis, Characterization and Application India- 2013	Robin Augustine, S. Thomas	Tissue engineering
32.	Best Poster Presentation Award -International Conference on Advanced Nanocomposite for Construction Materials (ICNC-2013) 2013	Robin Augustine, S. Thomas	Tissue engineering
33.	Best Paper Award,National Seminar On Advanced Polymer Materials(SCENTIA)	Runcy Wilson, S. Thomas	EVA/clay nanocomposites
34.	Best Poster Presentation Award,National Seminar on Recent Advances in Polymer Science and Technology-2012	DeepalekshmiPonnamamma,S. Thomas	Natural rubber/CNT nanocomposites
35.	Best Oral Presentation Award,National Conference on Nanostructured materials and Nanocomposites (NCNM) 2012	DeepalekshmiPonnamamma, S. Thomas	Natural rubber/CNT nanocomposites

36.	Young researcher award, the international conference on 'Functional Polymers 2011'	Cintil Jose, S. Thomas	A cost effective approach for the development of cellulose nanowhiskers
37.	Best paper award, National Seminar on 'Emerging Trends in Chemistry' 2012	Cintil Jose, S. Thomas	Novel approach to the development of cellulose nanowhiskers from Isorafiber
38.	Best oral presentation award -International Conference on Tissue Engineering and Regenerative Medicine (ICAPM-2013) National Institute of Technology, Rourkela, Odisha	Robin Augustine, S. Thomas	Biomedical
39.	Best poster award-Bioradiance 2014 (National level seminar), organized by the Pushpagiri Research Centre, Tiruvalla, Kerala	Robin Augustine, S. Thomas	Biomedical
40.	Best Oral Presentation - International Conference On Plasma Science And Nanotechnology, & 29 th National Symposium On Plasma Science And Technology	Jemy James, S. Thomas	Plasma Science
41.	Third prize for poster presentation, 2 nd International Conference on Nano Materials (ICNM) 2014	Robin Augustine, S. Thomas	Biomedical
42.	Best Oral Presentation Award -National Seminar on Material Science and Modern Analytical Techniques on 26 th & 27 th of March 2014	Preetha Balakrishnan, S. Thomas	Fully Biodegradable Potato Starch Composites: Effect Of Nano Fiber Reinforcement On Mechanical And Water-Sorption Characteristics
43.	Best Oral Presentation Award, National Seminar On Biopolymers And Green Composites (BPGC-14)	Dr.Praveen.G, S. Thomas	Biomedical
44.	Best Oral Presentation Award, National Seminar On Nanochemistry And	Dr.Praveen.G, S. Thomas	Biomedical

	Nanobiotechnology (Nanochembio-14)		
45.	EUPHRATES Erasmus Mundus scholarship by the European Union from Institution: University of Maribor, Slovenia	Sreerag Gopi, S. Thomas	Bionanocomposites
46.	Best Paper Award - National Seminar on Nanostructured Materials (NSM2014)	Jiji Abraham , S. Thomas	Elastomer nanocomposites
47.	Best Paper Award,National Seminar On Advanced Polymer Materials(Hesperos 2015)	Jiji Abraham , S. Thomas	SBR/CNT nanocomposites
48.	Best Poster Prize International Conference On Holistic Medicine - ICHM 2015	Blessy Joseph, S. Thomas	Cordyceps- a potent antidote for cancer
49.	Best Poster Presentation Award (Prof. D.M. Vasudevan Award),In Bioradiance-2015 'National Conference On Frontiers In Diabetic Research and Treatment'	Praveen.G, S. Thomas	Biomedical
50.	Best Oral Presentation Award, UGC Sponsored National Seminar On “Emerging Trends In Nanomaterials”	Praveen.G, S. Thomas	Biomedical
51.	Best poster award - Deakin India Research Initiative – International Symposium on Translational Research 2015	Aneesa .P, S. Thomas	Epoxy nanocomposites
52.	Best paper award,28 th Kerala Science Congress,2016	Praveen.G, S. Thomas	Biomedical Engineering
53.	Best Poster award, ICPPC,2016	Jiji Abraham , S. Thomas	Rubber Nanocomposites
54.	Best paper award,KETCON	Jiji Abraham, S. Thomas	Basic Engineering Track

55.	Best paper award Biomedical Engineering Track	Praveen G	Biomedical Engineering
56.	Best poster award International Conference on Biomaterials For Tomorrow 2018	Avinash Pai, S. Thomas	Nanocellulose
57.	Best poster award (Recent Trends in Materials Science and Technology conducted by MRSI)	Remya Vasudevan, S. Thomas	Epoxy nanocomposites
58.	Best poster award – 31 st Kerala Science Congress.	Avinash R Pai	Engineering and Technology Section
59.	Best Paper Award (National Conference on Changing Trends in Polymer Science and Technology (CTPST- 2021))	Blessy Joseph	Insights into the biomechanical properties of 3D printed scaffolds
60.	Best poster award –33rd Kerala Science Congress 2022	Abitha V K	Carbon black distribution in rubber blends.

Membership in Professional Bodies:

- Member of American Chemical Society (Rubber Division)
- Royal Society of Chemistry (Membership number: 473990)
- Honorable member of IMTCE Loyalty Award Club (Membership Number- IMTCE-LC-017)
- Member of Indian Membrane Society
- Member of Polymer Society of India
- Member of Society of Disordered Materials
- Member of Society of Polymer Technologists, University of Cochin
- Member of Mahatma Gandhi University, Chemical Society
- Fellow of New York Academy of Sciences, USA
- Actively engaged in the People's Science Movement for the Popularization of science to villages and rural areas
- Director-Nanomedicine, Centre for Biomaterials, Cellular and Molecular Theranostics (CBCMT), VIT –Vellore
- Quarterly "Franklin Membership" (Membership ID#KI16599). London Journal of Research in Science: Natural and Formal (LJRS)
- Fellow of International Academy of Physical Sciences (IAPS)

- Foreign Fellow of the European Academy of Sciences (EurASc)

Collaborating Institutes:

a) In India

- Dept of Materials Engineering, Indian Institute of Science (IISc), Bangalore
- Rubber Research Institute of India, Kottayam, Kerala, India - 686 009
- NIIST, Trivandrum, Kerala, India - 695 012
- Central Power Research Institute, Bangalore, India - 56094
- Vikram Sarabhai Space Research Centre, Trivandrum, India
- Rubber Technology Centre, Indian Institute of Technology, Kharagpur, India
- Polymer Chemistry Division, National Chemical Laboratory, Pune, India
- Sree Chitra Thirunal Institute of Medical Sciences and Technology, Trivandrum, Kerala, India
- Central Institute of Plastic Engineering and Technology, Guindy, Madras, India
- Department. of Polymer Science & Rubber Technology, Cochin University of Science & Technology, Cochin - 22, Kerala, India
- Indian Institute of Chemical Technology, Hyderabad, India
- Laboratory of Condensed Matter Physics, Department of Physics, University of Rajasthan, Jaipur, India
- Reliance Industries Limited, Maker Chambers IV, 3rd Floor, 222, Nariman Point, Bombay
- Elastomers Technical Services, Madurai, India
- High Polymer Engineering Division, Department of Chemical Engineering, Indian Institute of Technology, Madras, India
- Department of Chemistry, Karnatak University, Dharwar, Karnataka, India
- Department of Civil Engineering, Indian Institute of Technology, New Delhi, India
- Common Facility Service Centre, Industrial Estate, Changanacherry, Kottayam, Kerala, India
- Department of Physics, University of Mysore, Mysore
- MRF Tyres Ltd, Chennai
- Apollo Tyres Ltd, Vadodara

b) Abroad

- Macromolecular Science & Engineering Research Centre, Laval University, Quebec, Canada G1K7P4. (Prof. Prud 'homme)
- Abt. Kunststoffee/Verbundwerkstoffe, TU Hamburg-Harburg, AB 5-09, Denickestraße 15, D-21073 Hamburg, Germany (Prof. V. Alstädt)

- Technische Universität Chemnitz, Polymerchemie, Straße der Nationen 62, 0911 Chemnitz, Germany (Prof. Steffan Spange)
- Directeur de ENSCCF, 24 avenue des Lais, BP - 187 - 63174 Aubiere, Cedex, France (Prof. Jacques Lacoste)
- Laboratory of Macromolecular Structure Chemistry, Department of Chemistry, Katholieke University of Leuven, Belgium (Prof. Gabriel Groninckx)
- Martin-Luther-Universität Halle Wittenberg, FB Physik, Fridemann-Bach Platz 6, 06108, Halle, Germany (Prof. Manfred Knorgen)
- Assoc. Prof. of Polymer Physics, University of Chemical Technology Metallurgy, 8, KilmentOhridski Blvd., 1756 Sofia, Bulgaria (Dr. Christo Betchev)
- Institute of Material Science & Technology, Martin-Luther-Universität, Halle-Wittenberg, Postanschrift D-06099 Halle, Haussanschrift Geusaer Straße, Germany (Prof. (Dr.) Ing. Hans-Joachim Radusch)
- Institute of Composite Materials Ltd., University of Kaiserslautern, Kaiserslautern, Germany (Prof.(Dr.) Jozef Karger Kocsis)
- Institute of Polymer Research, Hohe Strasse 6, D- 01069 Dresden, Germany (Prof. Manfred Stamm, Dr. Jürgen Pionteck, Dr. Petra Poetschke, Dr. Cornelia Bellman)
- CNRS Lab, Laboratoire de Recherche sur les Polymères, UMR 7581- CNRS, 2-8 rue Henri Dunant, 94320 Thiais, Paris, France (Prof.(Dr.) Françoise Lauprêtre)
- R&D, Du Pont, Wilmington, Delaware, USA (Dr. Joseph V. Kurian)
- Institut des Matériaux de Rouen, faculté des sciences, BP12, 76801 Saint Etienne du Rouvray, responsable de LECAP, équipe de l'UMR6522 Polymères-Biopolymères-Membrane, France (Prof. Jean Marc Saiter)
- Laboratoire L2PIC, University of South Brittany, Rue Saint Maude, Lorient Cedex, France (Prof. Yves Grohens)
- Polymers Nanotextures & Nanocomposites, Centre de Recherche sur la Matière Divisée 1B, rue de la Ferrollerie, 45071 Orléans Cedex 2, France (Dr. Christophe Sinturel)
- Beijing University of Chemical Technology International Exchanges and Cooperation Dept, Add. No.15 Beisanhuan East Road, Beijing 100029, P.R.China (Dr. Yang Weimin)
- Thermal lab, UIT, University of Paris 12, Créteil Campus, France (Prof. Dr. Yves Candau and Prof. Dr. Abdel Boudenne)
- Department of Chemical Engineering, CIT, Katholieke University of Leuven, Belgium (Prof. Paula Mouldnaers)
- CNRS, Strasbourg, France, (Prof. Dr. René Müller)

- Department of Chemistry, Walter Sisulu University, Mthatha, South Africa. (Dr. Oluwatobi S Oluwafemi)
- Department of Chemical Engineering, Katholieke University of Leuven, Belgium (Prof. Dr. Paula Moldnaers)
- Jozef Stefan Institute, Ljubljana, Slovenia (Prof. Miran, Prof. Dr. Uros Cvelbar)
- General Cables, Indianapolis, USA (Dr. Vijay)
- University Technology Mara (UiTM), Malaysia (Dr. Chan Chin Han)
- Chemistry Institute, Federal University of Uberlandia–UFU, Av. João Naves de Ávila, 2121, Campus Santa Mônica, Bloco 1D, 38400-902, Uberlândia-MG, Brazil. (Prof. Daniel Pasquini)
- Universidade Federal do Triângulo Mineiro (UFTM), Av. Doutor Randolpho Borges, 1400, Secretaria do ICENE–SALA 109, Uberaba, MG, Brazil. (Prof. Luis Carlos)
- Université Cheikh Anta DIOP de Dakar, Senegal, (Prof. Coumba Thiandoume and Prof Modou Fall)
- Siberian Federal University, Russia (Prof. Tatiana Volova)
- Institut Jean Lamour, Université de Lorraine (Prof. Didier Rouxel)
- IMT Mines Albi France (Prof. Ange Nzihou)

Reviewer for International Refereed Journals:

ACS Journals: Macromolecules, Biomacromolecules, ACS Applied Materials & Interfaces, ACS Sustainable Chemistry & Engineering, Langmuir, ACS Omega

RSC Journals: Physical Chemistry Chemical Physics, RSC Advances

Wiley Journals: Polymer Composites, Journal of Biomedical Materials Research Part A, Advances in Polymer Technology, Polymer Engineering & Science, Polymer International,

Elsevier Journals: Advanced Drug Delivery Reviews, Applied Surface Science, Applied Polymer, Advanced Powder Technology, Arabian Journal of Chemistry, Biomaterials, Biosensors and Bioelectronics, Bioresource Technology, Biotechnology Reports, CARBON: Carbon, Carbohydrate Polymers, Ceramics International, Chemical Engineering Science, Applied Clay Science, Colloids and Surfaces A: Physicochemical and Engineering Aspects, Colloids and Surfaces B: Biointerfaces, Composites Part A: Composites Science and Technology, Egyptian Journal of Basic and Applied Sciences, European Polymer Journal, Food and Chemical Toxicology, Journal of Hazardous Materials, International Journal of Biological Macromolecules, International Journal of Pharmaceutics, Industrial Crops and Products, Biomass and Bioenergy, Journal of Colloid and Interface Science, Composites Part B: Journal of Environmental Chemical Engineering, Materials and Design, Polymer, Journal of Saudi Chemical Society, Materials Chemistry and Physics, Membrane Science, Materials Letters, Materials Science and Engineering C, Nanomedicine: Nanotechnology, Biology, and Medicine, Polymer Degradation and Stability, Progress in Materials Science, Sensors & Actuators: A. Physical; Sensors & Actuators: B. Chemical; Surface and Coatings Technology

Springer Journal : Critical Reviews in Environmental Science and Technology; Fibers and Polymers; Cellulose; Polymer Bulletin; Archives of Physics Research; Emergent Materials; Journal of Thermal Analysis and Calorimetry; Journal of Polymers and the Environment; Colloid and Polymer Science; Macromolecular Research; International Journal of Plastics Technology; Polymer Science, Series D; Polymer Bulletin; Journal of Polymer Research; Polymer Science, Series C; Fibers and Polymers; Iranian Polymer Journal; Colloid Journal; Polymer Science, Series B; Polymer Science, Series A; Polymer Science; Fibre Chemistry

IOP Publishing: Nanotechnology, Materials Research Express, Journal of Physics D: Applied Physics, Measurement Science and Technology,

SAGE Journals: Journal of Industrial Textiles,

MDPI Publisher: Biosensors, International Journal of Molecular Sciences, Materials, Polymers

Future Science Group: Nanomedicine,
Scientific Research Publishing

Academic Referee for Universities and Funding Agencies:

- University of Sains, Malaysia
- University of Calcutta, Calcutta, India
- University of Rajasthan, Jaipur, India
- DST, India
- DBT, India
- CSIR, India
- NRF, South Africa
- REPRISE, Italian Ministry of Education
- Polish Academy of Sciences
- DST/NSF
- Slovenian Research Agency (ARRS)
- Pole of Innovation Grant Scheme, Mauritius

Editorial Board Memberships

- SM Journal of Nanotechnology and Nanomedicine
- Nano Advances
- Materials Science and Engineering (Editorial Key Reviewers Committee)
- International Journal Of Advances In Engineering Research
- World Journal of Biotechnology
- Journal of Emerging Materials Technology

- Associate Editor, Bulletin of Materials Science
- Regional Editor - Current Smart Materials
- Editor in-Chief of Editorial Board-International Journal of Science World (IJSW)
- Editorial Member -Flat Chem, Elsevier
- International Advisory Board (IAB) for the Springer Nature, Book Series Gels Horizons: From Science to Smart Materials
- Editorial Review Board Member - International Journal of Surface Engineering and Interdisciplinary Materials Science
- Editorial Member -Journal of Molecular and Applied Bioanalysis
- Editorfor the Journal Nano-Structures & Nano-Objects.Elsevier /Global STM Journals
- Editorial Board Member for the Journal of Powder Metallurgy &Mining
- Editorial Board Member for the Acta Materialia Turcica (ActaMAT)
- Editorial Board Member for- SciFed Journal of Petroleum
- Co-Editor-in-Chief,International journal, ‘Functional Composites and Structures’, Korean Society of Composite Materials (KSCM)
- Editorial Board Member Advances in Higher Education,Director of Editorial Office,Universe Scientific Publishing
- Editorial board Member - Nigerian Journal of Materials Science and Engineering.
- Editorial Advisory Board member. ACS Macromolecules
- Editorial/Reviewer Board Member- JSM Clinical Research in HIV and AIDS
- Senior Editor Advanced Applied Materials, Sweden
- Editorial Board Member, Journal of Traditional Medicine & Clinical Naturopathy
- Editorial Board Member,International Journal of Nanoparticles & Nanotechnology
- Editorial Board Members,Journal of Materials Science
- Editorial Board of Journal of Chemical Engineering and Materials Science
- Associate Editorial Board member in our Cohesive Journal of microbiology & infectious disease (ITERM)
- Editorial Board of ASTM's Journal of Materials Performance and Characterization (MPC)
- International Journal of Nanotechnology and Nanomedicine Research of Clyto Online Publishing Inc
- Editor-in-Chief -Asian Journal of Nanoscience and Materials
- Editorial Board - Emergent Materials, Springer

Conferences Organised (2005-2019)

- 1) First International Conference on Polymer Blends and Composites, ICBC-2005, March 21-23, 2005, School of Chemical Sciences, Mahatma Gandhi University, Kottayam, Kerala, INDIA
- 2) International Conference on Natural polymers-2007, ICNP-2007, November 19-21, 2007, Mahatma Gandhi University, Kottayam, Kerala, INDIA
- 3) International Conference on Advanced Materials-2008, ICAM-2008, School of Chemical Sciences, Mahatma Gandhi University, Kottayam, Kerala, INDIA
- 4) Second International Conference on Polymer Blends and Composites-2008, ICBC-2008, September 22-24, 2008, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 5) International Conference on Nano Materials -2009 ICNM-2009 April 6-8, 2009, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 6) National Workshop on Synthesis and Applications of Nanomaterials-2010, NWNM-2010, Nanoscience and Nanotechnology, 12-14 January 2010, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 7) First international Conference on Nanostructured Materials and Nanocomposites (ICNM 2009) April 6-8, 2009, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 8) First International Conference on Nanomaterials (ICN 2010) April 27-29, 2010, Mahatma Gandhi University, Kottayam, Kerala, INDIA **(Convener)**
- 9) Second International Conference on Polymer Processing and Characterization (ICPPC – 2010) January 15, 16 and 17, 2010, Mahatma Gandhi University, Kottayam, Kerala, INDIA **(Convener)**
- 10) International Conference on Nanomaterials: Synthesis, Characterization and Applications (ICN 2010) held on April 27-29, 2010, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 11) First International Conference on Composites and Nanocomposites (ICNC 2011): January 7, 8 and 9, 2011, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 12) Second International Conference on Recycling and Reuse of Materials (ICRM 2011) 5-7 August 2011, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 13) First International Conference on Plasma Processing of Organic Materials and Polymers (PPOMP 2011) 25-27 November 2011, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 14) Third International Multicomponent Polymer Conference (IMPC 2012) 23-25 March 2012, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 15) The First Indo-US International Conference on Polymers for Packaging Applications (ICPPA 2012), 31st March – 2nd April 2012, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**

- 16) Second International Conference on Nanomaterials - Synthesis, Characterization and Applications (ICN – 2012) 13-15, January 2012, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 17) Third International Conference on Natural Polymers (ICNP 2012) 26-28 October 2012, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 18) The India-Israel Meeting On Material science And Nanoscience, (Iimmn-2013) , 31st January to 1st February 2013, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 19) First International Conference on Advanced Nanocomposites for Construction Materials (ICNC 2013) 12-14 March 2013, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 20) Third Euro-India International Conference on Nanomedicine and Tissue Engineering (ICNT 2013) 9-11 August 2013, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 21) Seminar on Polymers and Environment, 4th September 2013, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 22) International Conference on Advanced polymeric materials (ICAPM 2013) 11-13 October 2013, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 23) Third International Conference on Recycling and Reuse of Materials (ICRM 2014) held on 11-13 April 2014 Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 24) First World Conference on Fracture and Damage Mechanics (FRACTURE 2014) 9-11 August 2014 Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 25) Third International Conference on Polymer Processing and Characterization (ICPPC 2014) 11-13 October 2014, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 26) 29th National Symposium on Plasma Science & Technology (PLASMA 2014) 8-11 December 2014, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 27) Second International Conference on Nanostructured Materials and Nanocomposites (ICNM 2014) 19-21 December 2014, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 28) Fourth International Conference on Natural Polymers and Biomaterials (ICNP 2015) 10-12 April 2015, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 29) World Congress on Microscopy (WCM 2015) 9-11 October 2015, Mahatma Gandhi University, Kottayam, Kerala INDIA
- 30) International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites (ICNPM 2015) 13-15 November 2015, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 31) First International Conference on Advanced Materials for Power Engineering (ICAMPE 2015) 11-13 December 2015, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**

- 32) International conference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications (ICM-2016) 13-15 May 2016, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 33) Fourth International Conference on Nanomedicine and Tissue Engineering (ICNT 2016) 12-14 August 2016, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 34) Second International Conference Advanced Materials for Power Engineering (ICAMPE 2016) 11-13 November 2016, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 35) Fourth International Conference on Polymer Processing and Characterization (ICPPC 2016) 9-11 December 2016, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 36) Fourth International Conference on Nanostructured Materials and Nanocomposites (ICNM 2017) 10-12 February 2017, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 37) Second International Conference on Advanced Polymeric Materials (ICAPM 2017) 7-9 April 2017, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 38) Euro-India International Conference on Experimental and Clinical Medicine (ICECM-2017) on 10-12 November, 2017, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 39) International Conference on Molecular Spectroscopy (ICMS 2017) to be held on 8, 9 & 10 December 2017, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 40) Fourth International Conference on Reuse and Recycling of Materials (Polymers, Wood, Paper, Leather, Glass, Metals, Ceramics, Semi Conductors, Water etc) and their products (ICRM – 2018) 9-11 March 2018, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 41) International Conference on Nanomaterials: Synthesis, Characterization and Applications (ICN 2018) to be held on 11, 12 and 13 May 2018, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 42) Second World Congress on Microscopy: Instrumentation, Techniques and Applications in Life Sciences and Materials Sciences (WCM-2018): 10-12 August 2018, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 43) Fifth International Conference on Nanomedicine and Tissue Engineering (ICNT 2018) 12-14 October 2018, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 44) Sixth International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Nanocomposites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales (ICNP – 2018) 7-9 December 2018, Mahatma Gandhi University, Kottayam, Kerala INDIA **(Convener)**
- 45) Fourth International Conference on Nanomaterials: Synthesis, Characterization and Applications (ICN 2019) on 12, 13 and 14 April 2019 at Mahatma Gandhi University, Kottayam, Kerala, India. **(Convener)**

- 46) Nano India Mahatma Gandhi University, Kottayam, Kerala on April 26 & 27th, 2019(**CO-PATRON**)
- 47) International Workshop & Conference on Nutraceuticals, Herbals Supplements and Nano Formulations (ICNH-2019) on 13-15 September, 2019(**Chairman**)
- 48) Third International Conference on Advanced Materials (ICAM 2019) at Mahatma Gandhi University, Kottayam, Kerala, India on 9-11 August 2019 (**Chairman**)
- 49) Fifth International Conference on Polymer Processing and Characterization (ICPPC 2019) on 11, 12 and 13 October 2019 at Mahatma Gandhi University, Kottayam, Kerala, India.(**Chairman**)
- 50) International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Nanocomposites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales (ICNP – 2019) 6- 8 December 2019 at Mahatma Gandhi University, Kottayam, Kerala, India(**Chairman**)
- 51) International Conference on Liquid Crystals, Liquid Crystalline Polymers and Nanosystems: From Macro to Nano Length Scales (ICLCP 2019) on 13, 14 and 15 December 2019 at Mahatma Gandhi University, Kottayam, Kerala, India(**Chairman & Convenor**)
- 52) International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Nanocomposites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales (ICNP – 2019) 16-18 December 2019, (**Chairman**)
- 53) First International Online Conference on Blends, Composites, Bio-Composites and Nanocomposites (ICNC–2020) on 9,10 and 11 October 2020 (**Chairman**)
- 54) International Online Conference on Macromolecules 13th-15th November 2020- “100 YEARS OF POLYMERSCIENCE – FROM PAST TO FUTURE”. (**Chairman**)
- 55) Fifth International Online Conference on Reuse and Recycling of Materials (Polymers, Wood, Paper, Leather, Glass, Metals, Ceramics, Semi Conductors, Water etc) and their products (ICRM – 2020) to be held from 11,12 and 13 December 2020(**Chairman**)
- 56) International Webinar on Advances in Physics, Chemistry, Mathematics, Computer Sciences & Biological Sciences((CONIAPS XXVI) on 18, 19 and 20 December 2020 (**Chairman**)
- 57) International Online Congress on Membranes and Membrane Assisted Processes (ICMMAP 2021) on 12, 13 and 14 February 2021 at Mahatma Gandhi University, Kottayam, Kerala, India (**Chairman**)
- 58) International OnlineConference on Nano Materials (ICN 2021) 9-11 April 2021 (**Chairman**)
- 59) International Online Conference on Materials Science and Technology (ICMT 2021) November 12-14, 2021 at Mahatma Gandhi University, Kottayam, Kerala, India (**Chairman**)
- 60) International Online Conference on Energy Sciences (ICES 2021) 10-12 December 2021 at Mahatma Gandhi University, Kottayam, Kerala, India (**Chairman**)

- 61) International Online Conference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications (ICM-2021) 10-12 September 2021 at Mahatma Gandhi University, Kottayam, Kerala, India (**Chairman**)
- 62) Invitation for Online Plenary Talk: International Online Congress on Membranes and Membrane Assisted Processes (ICMMAP 2021) on 12, 13 and 14 February 2021 at Mahatma Gandhi University, Kottayam, Kerala, India.
- 63) International Online Conference on Nano Materials (ICN 2021) (09-11 April 2021)
- 64) International Online Conference on Reuse, Recycling, Upcycling, Sustainable Waste Management and Circular Economy (ICRSC – 2022). September 9-11, 2022 at Mahatma Gandhi University, Kottayam, Kerala, India
- 65) International Online Conference on Foamed Polymers (ICFP 2022) 8-10 July 2022
- 66) International Online Conference on Nano Materials (ICN 2022) 12-14 August 2022
- 67) International Workshop and Conference on Membrane Assisted Water Purification Processes (ICMW - 2023) March 9, 10, 11 and 12, 2023
- 68) International Hybrid Conference on Nano Structured Materials and Polymers (ICNP 2023) May 12-14, 2023
- 69) International Online Conference on Outcome-Based Education STRIDE Supported (OBE – 2023) Feb 10, 11 and 12, 2023.
- 70) International Conference on “Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications (ICM-2024)” to be held from 12, 13 and 14 January 2024 at Mahatma Gandhi University, Kottayam, Kerala, India
- 71) International Conference on “Nano Structured Materials and Nanocomposites (ICN 2024)” 10-12 May 2024 at Mahatma Gandhi University, Kottayam, Kerala, India
- 72) Sweden/Egypt/India International Conference on "WATER PURIFICATION and MANAGEMENT" (WPM 2024) to be held from 6, and 7 July 2024 at Mahatma Gandhi University, Kottayam, Kerala, India
- 73) International Conference (Offline And Online) on Polymers, Composites, Nanocomposites & Biocomposites-2024 (ICPCNB-2024), scheduled to be held from November 8th to 10th, 2024, at Mahatma Gandhi University, Kottayam, Kerala, India

Outstanding Contributions of Prof. Thomas and Group

1) *Dynamics of phase separation in nano scale polymer blends*

The dynamics of phase separation of the epoxy based nano scale blends was investigated by high resolution scanning electron microscopy (SEM), transmission electron microscopy, atomic force microscopy, and time-resolved light scattering. The morphologies of the blends showed a wide spectrum of new structures ranging from dispersed to co-continuous type, exhibiting irregular shapes. In most cases, the time-resolved light scattering results display clearly that the phase separation takes place according to a spinodal decomposition mechanism and the evolution of scattering

vector q_m corresponding to epoxy droplets follows a Maxwell-type relaxation equation. However, very complex phase separation process was also seen certain blend compositions involving both nucleation and growth and spinodal decomposition. The temperature-dependent relaxation time τ obtained for these blends can be described by the Williams–Landel–Ferry equation. It demonstrates experimentally that the coarsening processes of epoxy droplets and the final morphologies obtained in these thermoplastic–epoxy systems are affected by viscoelastic behavior

2) ***Development of high-performance polymer nanocomposites***

In the area of polymer nanocomposites, Prof. Thomas' group synthesized several nanofillers and fabricated high-performance nanocomposites based on natural rubber, PS, EVA, NR and epoxy resin. The morphology, mechanical properties, rheology and failure properties of these composites have been carefully analyzed

3) ***Processability-morphology-property relationship in nanostructured polymer blends and nanocomposites***

Processability- structure- morphology- characteristics of a large number of nano scale polymer blends and nanocomposites have been established. .

4) ***Development of nano-scale fiber reinforced green polymer composites***

Cost effective and eco-friendly composite materials have been developed from nano cellulose nano chitin and nano starch based on several polymers. Fundamental investigations have been performed on fiber-matrix interface adhesion, mechanical properties, and viscoelastic behavior. A new method has been proposed for the estimation of fiber-matrix interface adhesion by analyzing the kinetics of transport of solvents through the composite samples.

5) ***Design of nano scale polymeric membranes for transport and selective separation***

In the area of diffusion and transport, Dr. Thomas has developed several cost effective and trouble free nanocomposite membranes as well as polymer blend membranes for the restricted transport of solvents, vapours, gases and for the selective separation of liquid mixtures. Jointly with Apollo tyres, the group of Prof. Thomas invented new inner liners and inner tubes for auto tyres.

6) ***Development of nano-scale interpenetrating polymer systems***

Prof. Thomas group could do excellent work on the preparation and processing of interpenetrating polymer networks from natural rubber/PS, NR/PMMA and SBR/PMMA. The cross-linked rubber was swollen in styrene or PMMA first, followed by polymerization and crosslinking.

7) ***Dual porous polymer nano-scale scaffolds for tissue engineering***

Very recently electrospinning has been made use of for the development of dual porous new bio-degradable polymer nanocomposites scaffolds for tissue engineering. Biodegradable polymers such as PLA, PHB and polyesters were used for this purpose. Nanofillers such as clay, carbon nanotube are being used.

8) ***Micro and nano fibrillar polymer nano composites from waste plastics***

The group of Prof. Thomas developed a new class of microfibrillar polymer composites from PP/PBT and nylon12/PP blends. Morphology, mechanics, crystallization, dynamic viscoelastic properties have been analyzed as a function of temperature, draw ratio and blends composition.

9) ***Development of a new green adsorbent material from cellulose nanofibers for water purification.***

A new high performance adsorbent material has been developed for the adsorption of positively charged crystal violet dyes from CNFs via a nonsolvent- assisted methodology using Meldrum's acid as an esterification agent. It is also demonstrated that the Meldrum's modified cellulose nanofiber-based PVDF nanofibrous membrane can be successfully used to remove the crystal violet dyes and Fe₂O₃ nanoparticles (with the rejection of over 99%) from the water.

10) Self assembled nano scale hybrid filler system for reinforcing polymer systems

Surface modified hybrid nano-scale fillers were used for the reinforcement of many polymer system where the functional groups present at the filler surface self assemble to form three dimensional net work structure in the polymer system leading to dramatic improvement in the mechanical properties.

11) Interpenetrating polymer systems

We could do excellent work on the preparation and processing of interpenetrating polymer networks from natural rubber and PS. The cross-linked rubber was swollen in styrene first, followed by polymerization and crosslinking

12) Recycling and reuse of waste rubbers

In the area of recycling, we have developed a cost –effective technique for the recycling of cross-linked waste rubbers (prophylactics) obtained from the latex industries

13) Synthesis of new accelerators and their use in rubber vulcanization

A series of accelerators based on 1-phenyl-2, 4-dithiol biuret has been synthesized and their effect on vulcanization has been studied. These accelerators act as an excellent binary system for the vulcanization of rubbers

Patents Granted:

Sl. No.	Name	Invention	Patent Application No. & Date	CURRENT STATUS
1.	Sabu, Thomas, Nandakumar Kalarikkal. Prajitha Velayudhan, Jibin Keloth Paduvilan	Core Shell Structure Reinforced Natural Rubber Composites For Green Tyre Application And Preparation Thereof	Application No. : 202141011913 Patent No. : 512432	Patent Granted
2.	Avinash R Pai Sabu, Thomas, Nandakumar Kalarikkal.	Electromagnetic Interference Shielding Composition, Article And Methods Thereof	Patent No. : 495529 Application No. : 201911046464 Date of Filing : 14/11/201	Patent Granted
3.	Vattikuti Lakshmana Rao, Bejoy Francis, Rajagopal Ramaswamy, KavoorNinanNinan,	Fibre reinforced composites with toughened epoxy matrix and a process for preparing the same,	Application 940/CHE/2006 , published 2007-12-07.	Patent Granted

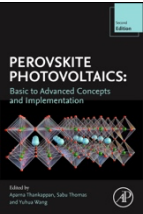
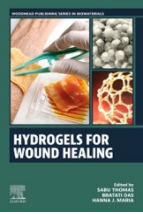
	Sabu Thomas.			
4.	Sabu Thomas, Ajesh K. Zachariah, P.K. Mohammad, Arup Kumar Chandra.(Granted)	Highly Gas Impermeable Elastomeric Rubber-Rubber Blend Nanocomposites,	Patent No. : 317124, Application No. : 135/CHE/2012 ,	Patent Granted
5.	Mohammed Arif P, Sabu Thomas, Nandakumar Kalarikkal	A polymer Nanocomposite, Process, And Application there-of ,	Indian patent Application No: 638/DEL/ 2015 Publication date: Sep 15, 2016, WIPO Publicati on number: WO201614284 8 A1	Patent Granted
6.	Amirsadegh Rezazadeh Nochehdehi, Sabu Thomas, Minoo Sadri, Yves Grohens, Nandakumar Kalarikkal	Biocompatible Iron-Cobalt- Hydroxyapatite (FeCo@HAP) nano-alloys process and applications	201941000403 , 04/01/2019	Reply to FER filed. Application in amended examination
7.	Josmin P. Jose, Sabu Thomas	Designing of Superior Nanodielectric XLPE/Al ₂ O ₃ Nanocomposite	201841040356 , 25/10/2018	Patent Granted
8.	Elizabeth Francis, Ko Hyun-U, Kim Jaehwan, Sabu Thomas	Ionic liquid modified MWCNT based Poly vinyl chloride nanocomposite sensors for temperature sensing applications	201841040345 , 25/10/2018	Patent Granted
9.	Meldin Mathew, Deepu. A. Gopakumar, Sayju Karim Andani, Sabu Thomas	A Sustainable Water Purification System Based on Coir Fiber coupled with UV Treatment	201841040341 , 25/10/2018	Patent Granted
10.	Sabu Thomas, Abitha V K	Filler localization in elastomer blends using new mixing sequence	201841040330 , 25/10/2018	Patent Refused
11.	Ajitha A R, Aswathi M K, Sabu Thomas, Nandakumar Kalarikkal, Lovely Mathew P, Geethamma V G	MWCNTs reinforced polymer blend nanocomposite of Poly(trimethylene terephthalate) and Polypropylene for EMI shielding application	201841003768 , 01/02/2018	Patent granted
12.	Aswathi M.K, Ajitha A.R , Sabu Thomas, Nandakumar Kalarikkal,	New Poly(trimethylene terephthalate) based nanocomposite formulation for EMI Shielding	201841003767 , 01/02/2018	Patent granted

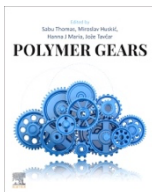
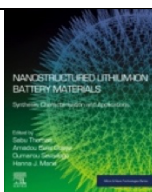
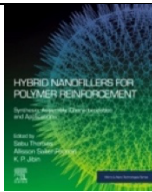
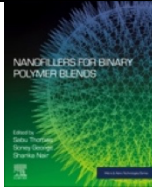
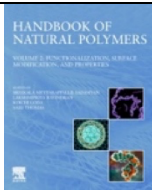
	M. Padmanabhan, Lovely P. Mathew			
13.	Dr.Maheswar Panda Dr.Sabu Thomas	Novel Method of Developing Improved Polymer Dielectrics from PVDF-Metal/PVDF- Ceramic Composites	202141042021 09/09/2021	Patent granted

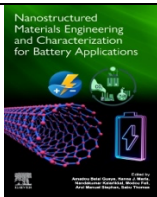
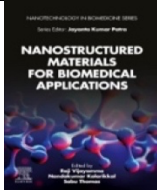
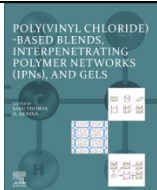
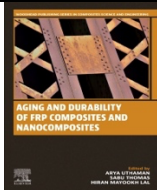
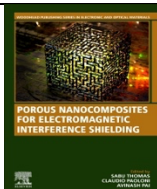
Patents Filed:

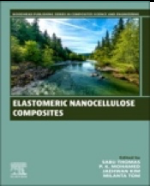
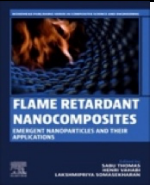
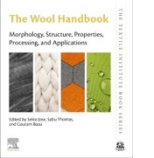
1. Method for improving the comparative tracking index of polymer composites, Indian patent Application No:4239/CHE/2014 ,HarinarayananPuliyalil, Uros Cvelbar,MiranMozetic, Sabu Thomas.
2. **Effect of dynamic cross linking of polyethylene on self assembling of nanoscale fillers "** for the application no: **202341060708**
3. **Natural rubber nanocomposites for flexible EMI shielding material"** for the application no: **202341060709**

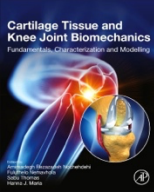
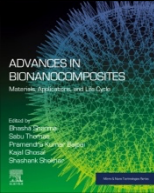
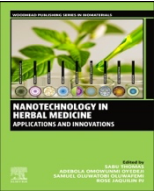
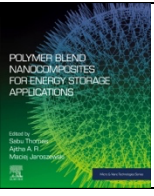
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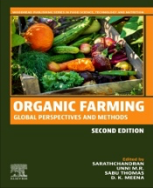
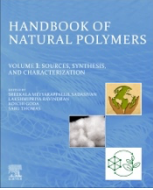
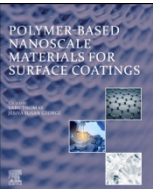
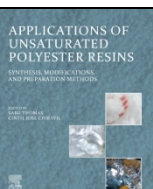
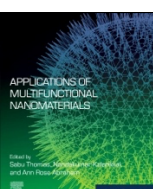
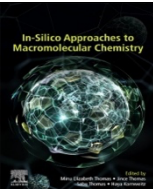
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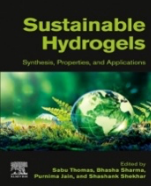
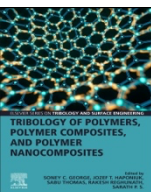
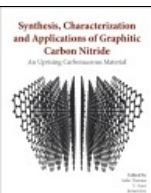
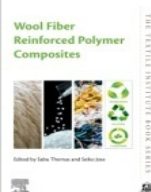
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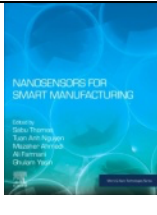
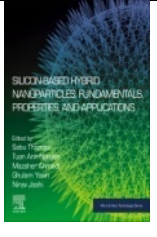
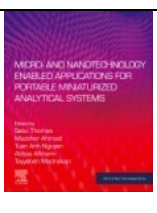
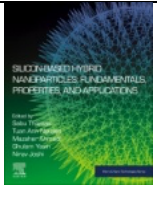
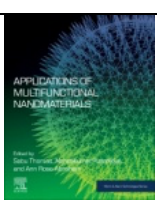
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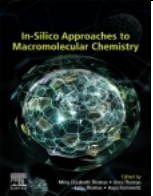
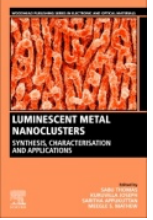
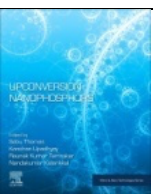
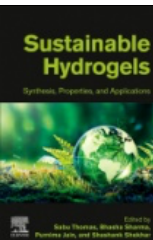
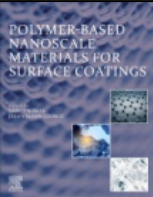
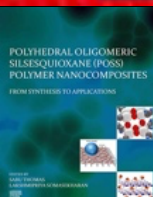
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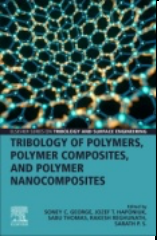
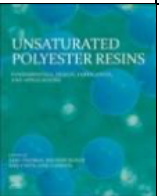
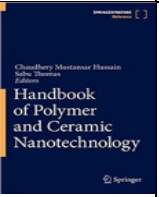
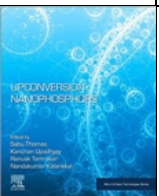
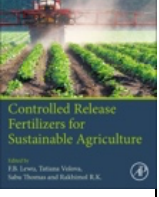
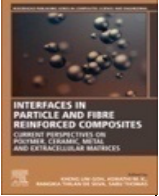
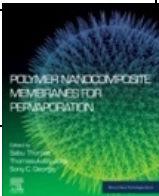
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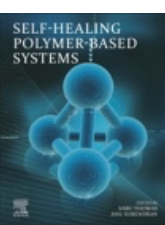
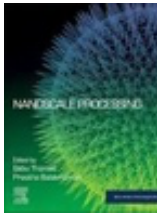
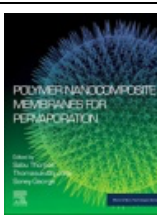
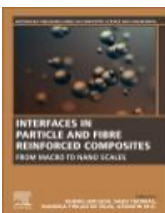
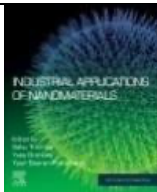
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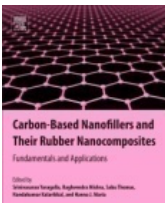
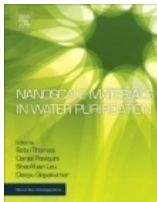
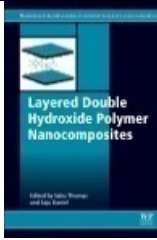
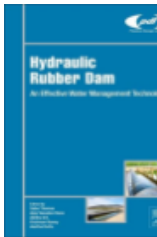
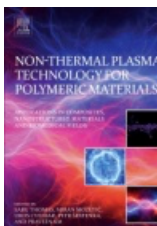
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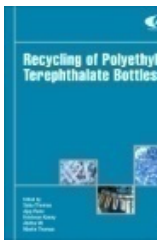
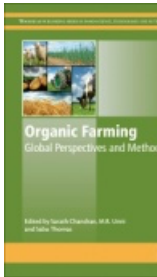
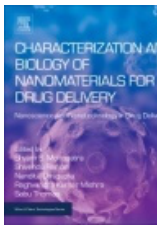
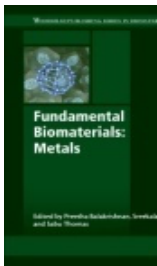
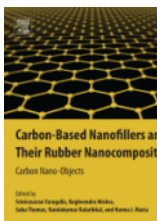
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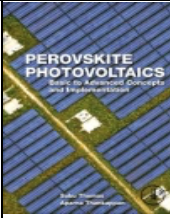
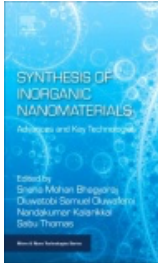
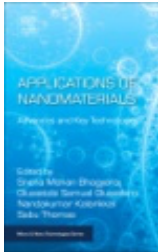
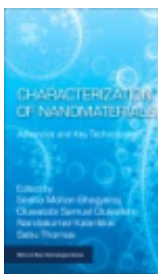
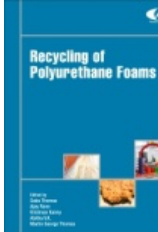
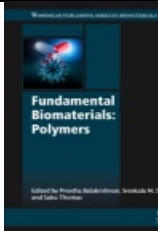
54.		Tribology of Polymers, Polymer Composites, and Polymer Nanocomposites 1st Edition - October 8, 2022 Editors: Soney George, Jozef Haponiuk, Sabu Thomas, Rakesh Reghunath, Sarath P. S. eBook ISBN: 9780323907491 Paperback ISBN: 9780323907484 View series: Elsevier Series on Tribology and Surface Engineering
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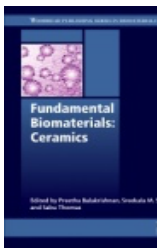
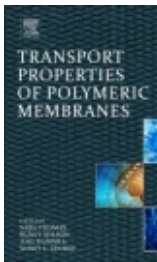
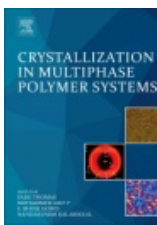
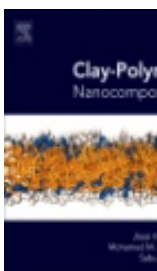
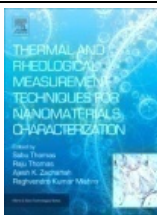
		Editors: Sabu Thomas Soney C. George Thomasukutty Jose Paperback ISBN: 9780128167854 eBook ISBN: 9780128167861 Imprint: Elsevier Published Date: 30th April 2020 Page Count: 440
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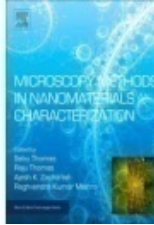
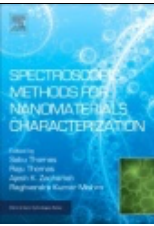
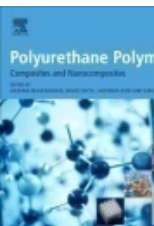
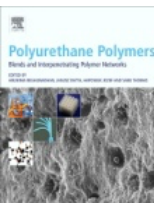
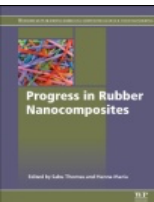
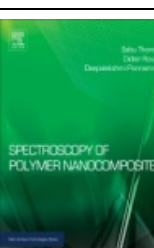
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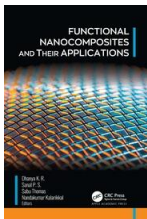
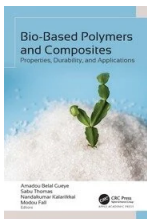
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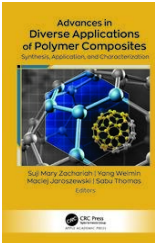
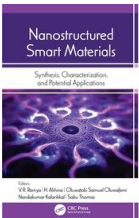
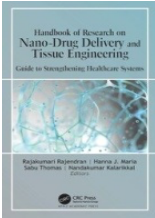
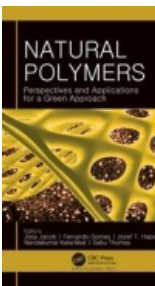
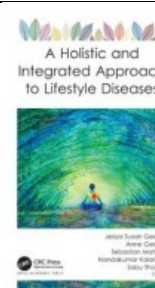
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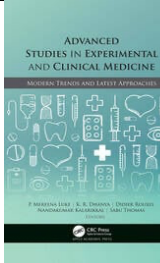
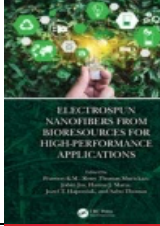
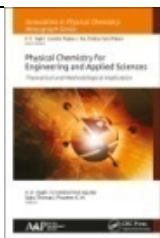
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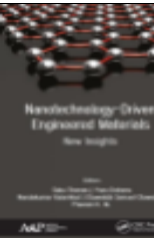
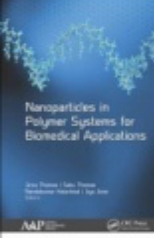
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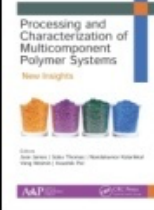
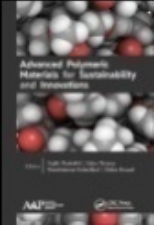
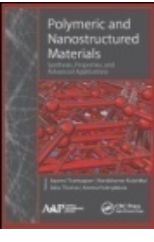
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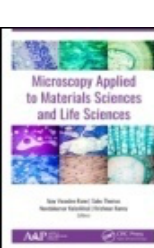
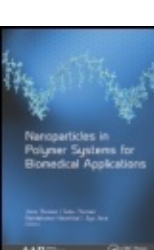
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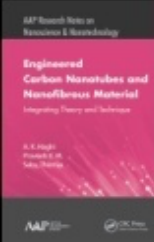
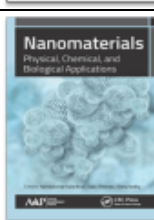
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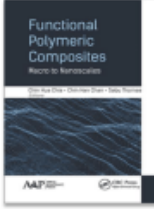
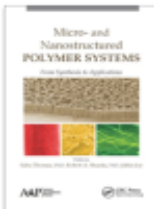
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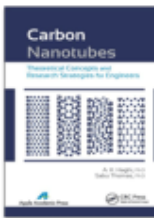
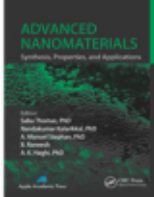
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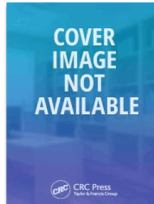
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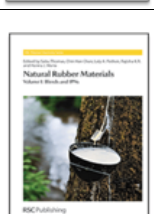
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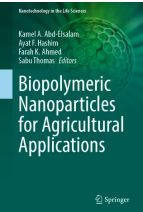
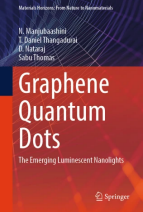
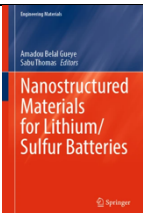
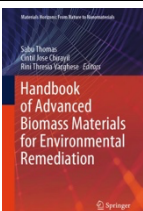
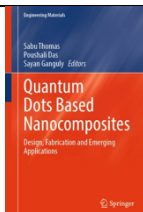
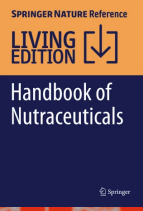
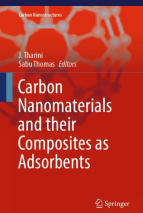
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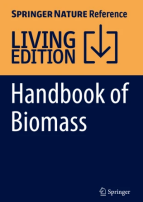
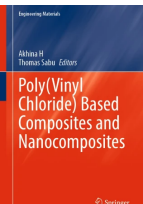
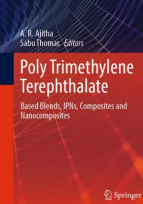
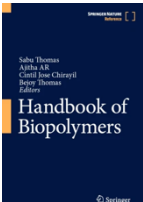
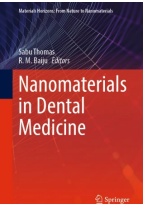
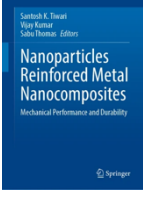


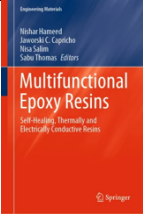
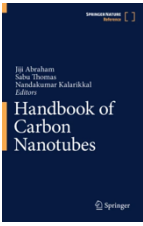
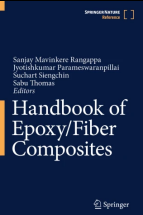
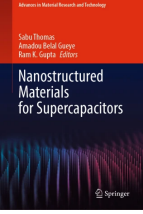
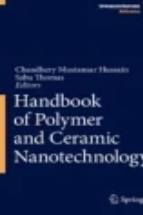
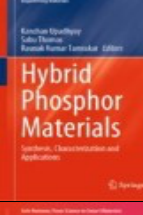
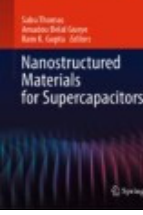
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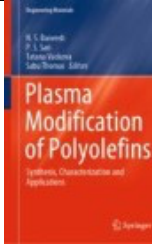
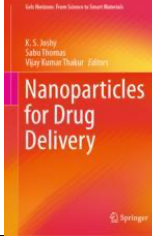
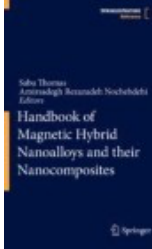
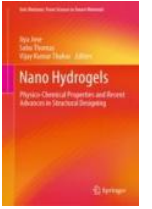
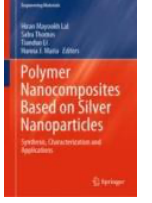
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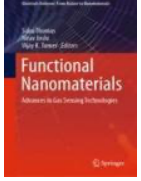
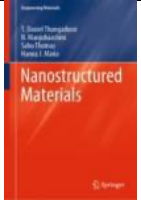
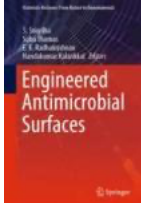
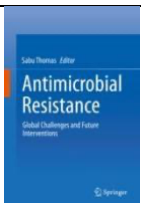


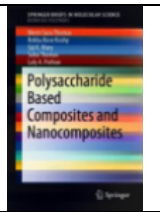
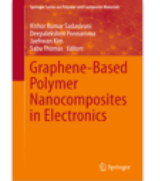
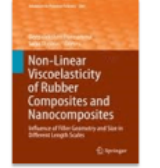
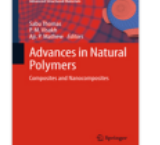
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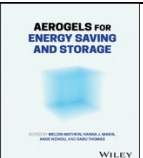
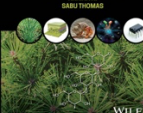
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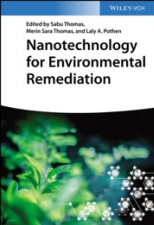
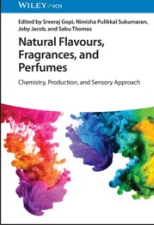
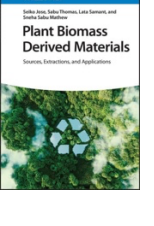
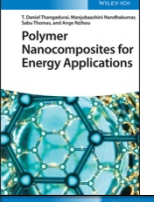
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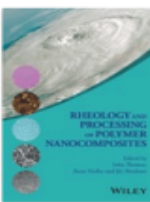
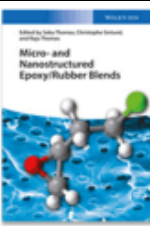
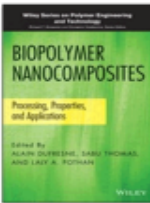
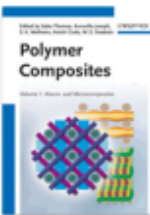
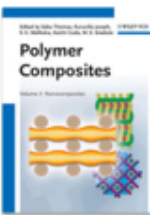
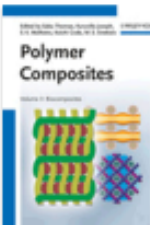
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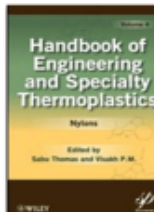
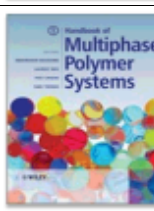
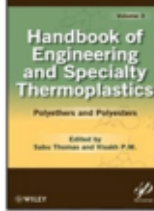
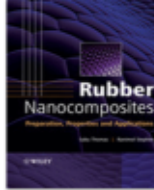
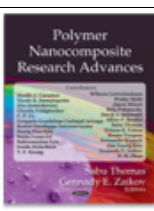
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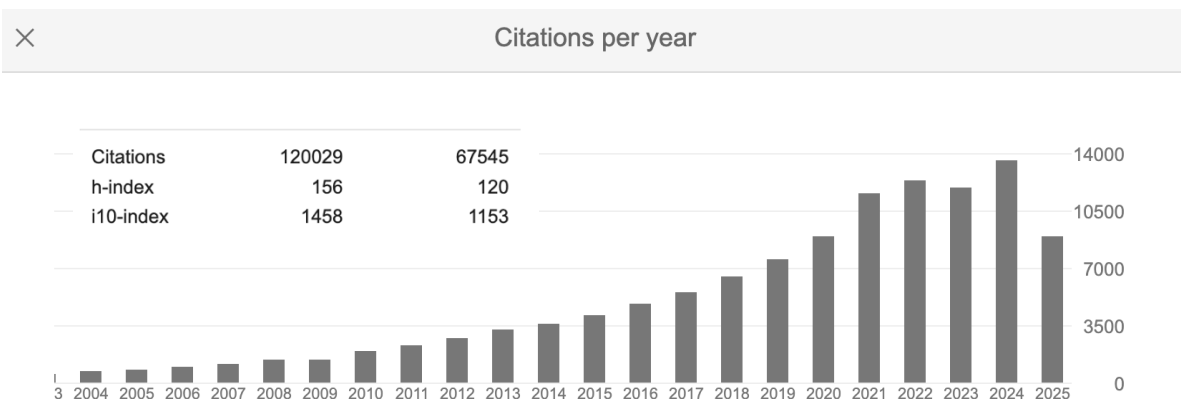
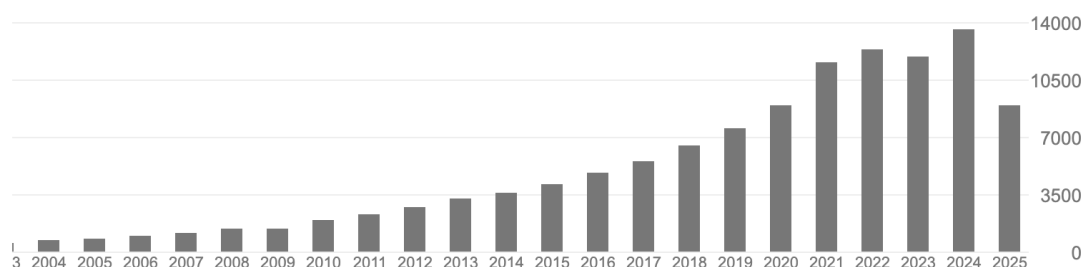
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