CURRICULUM VITAE

1. Name: **SUSANTA BANERJEE**

2. Date of Birth: **01 April 1964**

3. Designation & Official Address:

Professor (HAG Scale)
Institute Chair Professor
Chairperson, Central Research Facility
Former Head**,** Materials Science Centre
Indian Institute of Technology Kharagpur
Kharagpur – 721302, India
Tel. +91-3222-283972; Mobile:+91-7586917207
E-mail: susanta@matsc.iitkgp.ac.in

4. Academic Credentials:

- **Doctor of Philosophy:** Indian Institute of Technology Kharagpur, Kharagpur, India, 1993 (*Thesis Title: Phosphorus Containing Polymers*)
- **Master of Technology:** Materials Science and Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India, 1990
- **Master of Science:** Chemistry, Indian Institute of Technology Kharagpur, Kharagpur, India, 1988

5. Scholastic accomplishment:

- *h-index* / total citation: **49 / 8083**, *i10-index*: **187** (as on October 01, 2024)
- Google Scholar: https://scholar.google.co.in/citations?user=27V8W6sAAAAJ&hl=en
- ORCIDid: https://orcid.org/0000-0002-0358-3198
- Scopus author ID**:** 7404544930

6. Research / Teaching:

- **Research Interests:** High-performance polymers, Membrane-based separation, Proton exchange membranes, Hyperbranched polymers, Light emitting polymers, Polymer nanocomposites, Lithium-metal, Lithium-ion and Lithium-sulfur batteries, Waste fiber-cement composites.
- Taught various courses in polymer in the Department of Chemicals Sales and Marketing, Jiwaji University, Gwalior, India as a visiting faculty (From 1995 to February 2004)
- Teaching B. Tech., M. Tech. and Ph. D. Students at IIT Kharagpur since 2006; 1. Techniques for Materials Characterization (MS60002); 2. Manufacture of Industrial Polymers (MS60015); 3. Technology of Natural and Synthetic Elastomers (MS60018); 4. Materials Lab (MS69003); 5. Polymer Technology (MS41004); 6. Science and Technology of Polymers (MS60011); 7. Polymers for electronic and photonic applications (MS60066).

7. Research, Teaching and Industrial Experience (33 years)

Sl. No.	Post	Organisation / University	From	To	Experience (Years and Months)
1	Professor (HAG)	IIT Kharagpur	July 2019	Till date	5Y (up to 3 May 2024)
2	Professor	IIT Kharagpur (*AvH Fellow at IPF, Dresden, sabbatical leave from June 2019 to Nov. 2019)*	Dec. 2011	July 2019	7Y 7M
3	Associate Professor	IIT Kharagpur	April 2007	Dec. 2011	4Y 8M
4	Assistant Professor	IIT Kharagpur	January 2006	April 2007	1Y 4M
5	Lead Polymer Scientist	GE India Technology Centre (JFWTC), Bangalore	May 2004	Dec. 2005	1Y 8M
6	Scientist "D"	Defence R & D Organisation (DRDE, Gwalior)	July 2000	April 2004	3Y 9M
7	Scientist "C"	DRDE, Gwalior (*AvH Fellow at TU Munich with EOL from July 1997 to Feb. 1999*)	July 1995	June 2000	5Y
8	Scientist "B"	DRDE, Gwalior	Dec. 1991	June 1995	3Y 6M

8. Publication/Research Guidance:

PUBLICATIONS	Published / granted	Under review
a. Publications in refereed Journals	250	07
b. Presentations in seminars / conferences	155 (*from S. Banerjee and group*)	02
c. Books and Monographs	15 (Book chapters) 01 (Book)	0
d. Patent / copyright obtained / filed	07 Granted	02 Applied
RESEARCH GUIDANCE	**Completed**	**In progress**
a. Guidance at doctoral level	27 (One jointly with Prof. Brigitte Voit, IPF/TU Dresden, *DAAD Bi-nationally Supervised Doctoral Degree Program*)	10
b. Guidance at masters level	46 (17 Jointly with colleagues from Germany through *DAAD/IIT Master Sandwitch and DAAD KOSPIE program)*	02

9. International Academic exposure:

S. No.	Post/ Assignment	Organization/ Institute	Area of Assignment	Duration		
				From	To	In Years & Months
1	AvH Fellow	TU Munich	Research on Polymeric Materials	July 1997	Feb.1999	1 Y 20M
2	AvH Fellow	IPF-Dresden	Research collaboration	May 2007	July 2007	2M
3	AvH Fellow	IPF-Dresden	Research collaboration	May 2008	July 2008	2M
4	INSA-DFG Fellow	IPF-Dresden	Research collaboration	May 2009	July 2009	2M
5	AvH Fellow	Marburg University	Research collaboration	May 2010	July 2010	2M
6	AvH Fellow	IPF-Dresden	Research collaboration	May 2012	July 2012	2M
7	AvH Fellow	IPF-Dresden	Research collaboration	May 2016	July 2016	2M
8	IPF Visiting Scientist	IPF-Dresden	Research collaboration	May 2017	July 2017	2M
9	AvH Fellow	IPF-Dresden	Research collaboration/joint supervision	June 2019	Nov. 2019	6M
10	AvH Fellow	IPF-Dresden	Research collaboration/joint supervision	May 2022	July 2022	2M
11	IPF Visiting Scientist	IPF-Dresden	Research collaboration/joint supervision	May 2023	July 2023	2M

10. Affiliation to Scientific/Technical Committees at State/National/International level:

- Panel member of "High Energy Materials" of Armament Research Board (ARMREB) of DRDO (2013-2016)
- Member of the International Selection Board of the Henri Moissan International Prize of France, from 2013 till date.
- Member of the Programme Advisory Committee (PAC) on Materials, Mining & Minerals Engineering under Science and Engineering Research Board (SERB) from July 2021 till date.
- Faculty/ Scientist Selection Committees, IIT Delhi, IIT Chennai, IACS Kolkata DRDO, CSIR
- International Expert: Russian Science Foundation

- Panel member of "National Technical Textiles Mission (NTTM)", Ministry of Textiles, Government of India, from 2023 till date.

11. Editorial Board Member:

- Journal of Polymer Materials (Tech Science Press, USA)
- e-Polymers (Walter de Gruyter GmbH & Co. KG (Berlin/Germany)
- Chemistry Africa-Springer,
- International Journal of Plastics Technology (IJPT) (Springer)
- Polymer Engineering and Science (PES) (Wiley)

12. Academic / Professional Awards (honours):

- Merit Cum Means **(MCM)** fellowship from IIT Kharagpur (1986 to 1988).
- **NET** (CSIR, JRF) and **GATE** fellowship (1988).
- Alexander von Humboldt Fellow, 1997
- Commendation certificate by SA to RM in 2001 for his outstanding contribution in the field of new materials for electronic applications in DRDO.
- DRDO Defense Technology Spinoff award from DRDO in 2001
- GE Management award, 2005 for development of SILTEM copolymer.
- GE Green Belt - DFSS in Six Sigma, General Electric, 2005 (Certificate No. 216198-227414-301005052)
- Fellow of West Bengal Academy of Science and Technology (Section IV: Engineering & Technology), 2014
- MRSI Medal, Materials Research Society India, 2017
- Institute Chair Professor Award, Indian Institute of Technology Kharagpur, 2020
- Prof. M. Santappa Memorial Award 2023, Society for Polymer Science, India.
- World's top 2 percent most-cited scientists list released by Stanford University, 2020, 2022 and 2023
- **Ph.D. Thesis Examiner**: Anna University, Madras University, Cultivation of Science, Jadavpur University, Calcutta University, Visva-Bharti University, Tezpur University, Utkal University, Sambalpur Univesity, Veer Surendra Sai University of Technology, Central University Hyderabad, Nagpur University, Benaras Hindu University, IIT-BHU, IIT Bombay, IIT Delhi, IIT Guwahati, IIT Bhilai, IIT Roorkee, NITK Surathkal, NIT Nagpur, MNNIT Allahabad, MNIT Jaipur, NCL Pune, CLRI Chennai, University of Johannesburg, University of Stellenbosh, Tshwane University of Technology, RMIT University.

13. Membership of professional bodies:

- Society of Polymer Science of India (Life member, since 1993, **KH-3**)
- Materials Research Society of India (Life member, since 2006, **LM B869**)
- American Chemical Society (Membership No. **30116196**)
- Academy of Microscope Science and Technology (Life member, **LM 0455**)

- Indian Science Congress Association (Life member, **LM 41406)**

14. Invited Speaker/Talk:

- Fluoropolymer 2002, Savannaha, USA
- SPSI-MACRO 2002 (IIT- Kharagpur)
- Polymer 2006, IACS Jadavpur, Kolkata
- SAMPADA-2008, Pune, India
- Philipps-Universität Marburg, Germany (2008, 2009, 2010, 2012)
- Leibniz-Institut für Polymerforschung Dresden, Germany (2008, 2010, 2023)
- University of Dusseldorf, Germany (2010)
- Fluoropolymer 2010, Meze, France
- APM2010, CIPET, Bhubaneswar
- SPSI-MACRO 2010 (IIT- Delhi)
- ICME 2011, Pune
- Bayreuth Polymer Symposium (BPS-13), Bayreuth, Germany (2013)
- FAPS-MACRO 2013, Bangalore
- RAPT 2014, Kolkata
- MACRO 2015, Kolkata
- APM 2016 (CIPET Ahmedabad)
- International Conference on Science and Engineering of Polymeric Materials (SEPM 2016), Monastir, Tunisia
- European Polymer Federation Congress (EPF 2015), Dresden, Germany, ***Keynote Speaker***
- Bayreuth University, Germany (2016, 2019, 2023)
- Ghent University, Belgium (2016)
- KaSAM 2016 (Pokhara, Nepal)
- Fluoropolymer 2016, New Orleans, USA
- Department of Polymer Engineering, University of Akron, 2016
- SPSI-MACRO 2018 (IISER – Pune)
- ICSM 2018 (MNNIT-Jaipur)
- Tennessee Tech University, Tennessee, USA, 2018
- IGSTC 2019 (CSMCRI-Bhavnagar)
- A.V. Topchiev Institute of Petrochemical Synthesis, RAS, Moscow, 2018
- Institute of Molecular Compounds, RAS, Saint-Petersburg, 2019
- Technische Universität Chemnitz, Germany, July 8, 2019
- Technische Universität Wien, Austria, August 5, 2019
- International Conference on Polymer and Rubber Technology, IIT Kharagpur, 24 to 27 September, 2019
- International Conference on Advances in Polymeric Materials (APM 2020), 13-15 February 2020, Bangalore.

- National Conference on Recent Trends in Materials Science and Technology (NCMST 2020), 7-9 December 2020, Thiruvananthapuram, ***Plenary Speaker***.
- Fourth Internation Conference on Soft Materials (SPM 2020), 13-18 December, Jaipur
- Scientific Seminar Series by Eminent Scientists at IIT Bhilai, 24 December 2020
- International Conference on Advances in Polymeric Materials (APM 2021), 9-13 March 2021, Bhubaneswar, ***Keynote Speaker***.
- International Conference on Advances in Polymeric Materials (APM 2022), 8-12 March 2022, Chennai, ***Keynote Speaker***.
- SPSI-MACRO, 2-4 November, 2022, Pune.
- Regional Asia-Australasia International Polymer Processing Society Conference (PPS–2023), 29th November-2nd December 2023 Kovalam, Kerala
- National Conference on 'Recent Advancement in Materials and Manufacturing-2023 (RAMM-2023, 2-3 November 2023, Bhubaneswar, ***Keynote Speaker***
- International Conference on Polymer Science and Technology, SPSI-MACRO-2023, 9-13 December, 2023, Guwahati.
- Polymeric Membranes: An Overview, MNIT Jaipur, April 8, 2024
- International conference on Polymers for Advanced Technology (APA 2024), 16-18 October, 2024, Jaipur.

15. Academic Activities:

- **Proceeding coordinator:** Emerging Trends in Polymer Science and Technology "ETPST – 2006" organized jointly by SPSI and IIT-KGP at IIT KGP, 8-9 Sept 2006.
- **Treasurer**: International conference on Hi-tech materials organized jointly by IIT KGP and DMSRDE Kanpur at IIT KGP, 11-13 December 2009.
- **Convener (Joint)**: International Year of Chemistry (IYC) 2011 & Symposium on Frontiers in Polymer Chemistry (FPC), IIT Kharagpur, November 29-30, 2011.
- **Convener (Joint)**: International Conference on Functional Materials (ICFM-2014), Organized by the Materials Science Centre, IIT Kharagpur, February 5-7, 2014.
- **President**, Society for the Polymer Science, Kharagpur Chapter (2010- May, 2015).
- **Coordinator (Joint):** AICTE sponsored short term course on "Renewable Energy Materials and their Industrial applications", Materials Science Centre, IIT Kharagpur November 05-16, 2012.
- **Principal coordinator**: Organizer AICTE sponsored short term course on "Materials for Advanced Applications", Materials Science Centre, IIT Kharagpur, September 02-13, 2013.
- **Co-convener**: Macro 2015, held at Indian Association for the Cultivation of Science (IACS), Kolkata, January 23-26, 2015.
- **Convener**: International Conference on Functional Materials (ICFM 2016), Organized by the Materials Science Centre, IIT Kharagpur, January 12-14, 2016.
- **Convener**: International Conference on Functional Materials (ICFM 2020), Organized by the Materials Science Centre, IIT Kharagpur, January 06-08, 2020.

- Completed the flagship Leadership Development training program "***Leadership for Academicians Programme (LEAP)***" sponsored by the Ministry of Human Resource Development, Govt. of India during February 25 to March 07, 2020 organized by IIT Bombay.
- Head (**Chair**), Materials Sciece Centre, IIT Kharagpur, May 08, 2014 to May 07, 2017(3 years)
- **Chairperson**, Central Research Facility, IIT Kharagpur, July 2022 to July 2025 (Ongoing)

16. Administrative experience:

Sl. No.	Post	Organization/ University	Duration		Experience (Years and Months)
			From (Date)	To (Date)	
1.	Asst. Warden	IIT Kharagpur (different hostels)	2006	2010	5Y
2.	Wardenship	MMM Hall IIT Kharagpur	Nov. 2010	Oct. 2014	4Y
3.	Head of the Department	Materials Science Centre, IIT Kharagpur	May 2014	May 2017	3Y
4.	Chairman	Commercial Establishment and licensing Agency (CELC), IIT Kharagpur	Jan. 2015	Dec.2017	3Y
5.	Member of Academic Council/Senate	IIT Kharagpur	Dec. 2011	Till date	13Y 6M
6.	Chairperson	Central Research Facility	July 2022	Till date	2+ Y

17. Important research projects undertaken

S.No.	Funding agency	Nature of project	Duration of project	Amountof grant (INR)
1.	IIT Kharagpur	Synthesis and characterization of processable novel co(polyetherimide)s as low dielectric constant material for microelectronic packaging	3Y (Completion: 31-05-2009, PI)	3,00,000/-
2.	DRDE Gwalior/ DRDO	Preparation of Novel Polymeric Materials for Chemical Sensor Application: Synthesis and Tailoring of Properties in Molecular Level	2 Y (Completion: 31-08-2008, PI)	7,54,400/-
3.	DST	Molecularly engineered novel membrane precursors and preparation of novel polymer nano-composite membranes for selective separation of gas mixtures	3Y (Completion: 30-04-2010, PI)	59,96,668/-
4.	CSIR	Synthesis and characterization of novel light emitting poly(arylene)s and poly(arylene ether)s and derivative thereof	3Y (Completion: 31-08-2010, PI)	9,06,000/-

5.	AvH Foundation, Germany	Grant for equipment purchase	2008	9,02,836/-
6.	DRDE/DRDO-Gwalior	Preparation and supply of poly(ether imide siloxane)s as membrane materials in bulk quantity for analytical sample inlet	2Y (Completion: 31-01-2011, PI)	8,52,400/-
7.	DST	Novel hyperbranched polyethers and polyetherimides based on elastomeric building blocks: Investigation into structure-property relationship	2Y (Completion: 14-05-2012)	13,68,000/-
8.	DRDE/DRDO-Gwalior	High strength polyimide-siloxane films with low heat shrinkage	2Y (Completion: 06-03-2013, PI)	9,98,400/-
9.	DST, Govt. of India	Novel polymeric composite membranes for selective separation of gas mixtures	3Y (Completion: 18-07-2015, PI)	55,00,000/-
10.	IIT Kharagpur	Centre of excellence for training and research in microfluidics	12Y(from: 17-12-2013, Co-PI)	250,90,000/-
11.	IIT Kharagpur	Development of the fourth circuit element "Fractance"	3Y (Completion: 31-03-2018, Co-PI)	94,50,000/-
12.	DST	Development of electrically conducting and EMI shielding effectiveness in polymer/MWCNT/grapheme composites at very low filler loading	3Y (Completion: 20-08-2019, Co-PI)	59,19,600/-
13.	DST (DST-RSF)	Creation of novel high-performance membrane materials and membranes based on them	3Y (Completion: 31-07-2019, PI)	26,24,320/-
	DST	An Electrochemical Sensor Based Handheld Potentiostat to Measure Urea/Creatinine Ratio in Blood and Urine	3Y (Completion: 17-02-2021, Co-PI)	34, 10,386/-
14.	DST	FIST grant (Submitted and sanctioned during my headship)	6Y (Completion: 31-03-2023, Co-PI)	3,50,000/-
15.	DST	Bio-inspired large area conformal and flexible sensors for biomedical and robotic applications	3Y (Completion: 29-02-2024, Co-PI)	24,36,000/-
16.	DST	Development and demonstration of integrated instrumentation system for quantitative detection of water contaminants with information database for surveillance of waterborne diseases	3Y (Completion: 29-02-2024, Co-PI)	29,39,612/-
17.	MEITy	Bio-inspired large area conformal and flexible sensors for biomedical and robotic applications	3Y (Completion: 29-02-2024, Co-PI)	39,00,000/-
18.	MEITy	Development and demonstration of integrated instrumentation system for quantitative detection of water contaminants with information database for surveillance of waterborne diseases	3Y (Completion: 29-02-2024, Co-PI)	39,00,000/-
19.	DST	Fabrication and Demonstration of All-Solid-State High Performance Flexible Supercapacitor Device	4Y 9M (from: 20-09-2019, Co-PI)	51,03,849/-
20.	DST	Piezoelectric / Triboelectric Nanogenerator Driven Flexible Self Charging Symmetric / Asymmetric	3Y (Completion: 31-03-2023, Co-PI)	52,46,348/-

		Supercapacitor Devices for Sustainable Power Generation		
21.	IIT Kharagpur	Surface engineering of textiles and soft/hard substrates by impregnation of metallic nanoparticles decorated graphene: An economical method to combat Covid-19 pandemic	3Y (Completion: 28-03-2024, Co-PI)	7,00,000/-
22.	CDAC	Electronic Platform to Monitor Cattle Health and Milk Quality	3Y 6M (from: 01-04-2022, Co-PI	15,53,000/-
23.	Wacker - Metroark Pvt. Ltd	Synthesis and Characterization of High-Performance Polymers and their Membrane based applications thereof to Mitigate Energy Crisis and Provide Clean Energy **Towards** Sustainable Development Goals	3Y (Completion: 31-08-2023, PI)	111,96,482/-
24.	SERB	All solid high performance polymer-based separators for Li ion and Li metal batteries	3Y (from: 13-03-2024, PI)	64,72,400/-
25.	DST (DST-RSF) **TPN-91889**	New polyimides and development of membranes based on them for hydrogen recovery in synthesis and decomposition of ammonia processes-	3Y (from Feb 2024, PI)	66,12,000/-
26.	SPARC	Solid Polymer Membranes for Fuel cell, Battery separator, and Water purification Applications	3Y (from: 01-04-2024, PI)	48,72,000/-
27.	SERB	Development of Polymer-Mxene based Smart Composites for Green EMI Shielding Applications (PCE)	3Y (from: 16-03-2024, Co-PI)	38,08,200/-
28.	SERB	Polymer composite based fractional capacitor and inductor fabrication for power electronics application(CFA)	3Y (from: 31-05-2024, Co-PI)	51,82,771/-
29.	NRB	Lithium - silver oxide (Li - AgO) rechargeable cells with hybrid electrolytes for underwater systems applications	3Y (From August 2024, Co-PI)	91,35,600/-
30.	NTTM	Waste Fibre or Textile Fabric Reinforced Greener Engineered Cementitious Composites – A Replacement of Conventional Concrete for Sustainable Infrastructure	3Y (From August 2024, Co-PI)	150,00,000/-

18. Important consultancy projects undertaken as Principal Investigator

S.No.	Client/ Organisation'sname	Nature of assignment	Duration ofassignment
1	Ester Industries Limited, Gurgaon	Thermoset polymer based meter boxes & distribution boxes: An ecological disaster	1Y (13 October 2011, PI)
2.	KERMEL-France	Synthesis of the soluble para-aramid polymers,	2Y (24 January 2014, PI)
3.	L&T Heavy Engineering,	Synthesis of PI-PDMS materials	1Y (31 March 2015, PI)

	Strategic Electronics Centre, Bangalore	and preparation of membranes,	
4.	Sun Pharmaceuticals Industries Ltd, Vadodara	Provide advice on reproducible synthesis and characterization of polymers	From 23 September 2019 till date

19. Complete list of research publications:

A. Referred Journals:

1. M. Das Dawn, S. Roy, A. Garai, **S. Banerjee**, K. Biradha, Superprotonic Conductivity by Synergistic Blending of Coordination Polymers with Organic Polymers: Fabrication of Durable and Flexible Proton Exchange Membranes, ***ChemSusChem* (2024)**, DOI: 10.1002/cssc.202401463
2. B. Ghanti, R. Kambli, H. Komber, B. Voit, **S. Banerjee**, Synergistically Functionalized Pyridinyl- and Phosphine-Oxide-Based Semifluoro-Sulfonated Copolytriazole Membrane Preparation via "Click" Polymerization for Proton Exchange Membrane Applications, ***Macromolecules,*** Vol. 57 **(2024)** 4584-4598
3. A. Goswami, A. Ghorai, D Pal, S**. Banerjee**, K. Biradha, Proton Conducting Metal-Organic Frameworks (MOFs) via Post Synthetic Transmetallation and Water Induced Structural Transformations, ***Chem. Eur. J.*** (**2024**); DOI: 10.1002/chem.202402165
4. S.K. Bhattacharyya, D. Biswas, N. Pandey, A. Ghorai, S. Nandi, G. Mukherjee, M. Mandal, N.C. Das, **S. Banerjee,** Synthesis of 1, 2, 3-triazole linked 5 fluorouracil - carbon dots -folate conjugates for target specific anticancer activity and cell imaging applications, ***Nano-Structures & Nano-Objects,*** Vol. 38 (**2024**) 101160; *DOI:10.1016/j.nanoso.2024.101160*
5. S. Roy, **S. Banerjee**, 2,5-Substituted Thiophene Functionalized Semifluorinated Polytriazoles and Evaluation of Low-Temperature Proton Exchange Membrane Application with Elevated Oxidative Stability, ***ACS Appl. Polym. Mater.*** Vol. 6 (**2024**) 3456-3469
6. K. Mazumder, B. Voit, **S. Banerjee**, Recent Progress in Sulfur-Containing High Refractive Index Polymers for Optical Applications, ***ACS Omega***, Vol. 9 (**2024**) 6253-6279
7. S. Mandal, M. Malanin, B. Ghanti. **S. Banerjee**. J. Sawada, T. Tada, G. Heinrich, S. Wießner, A. Das, Design of sacrificial network in modified natural rubber leads to strikingly improved mechanical performance with self-healing capability, ***Chemi. Eng. Journal,*** Vol. 474 (**2023**) 145838; *DOI: 10.1016/j.cej.2023.145838*
8. A. Mukherjee, S. Mondal, D. Das, **S. Banerjee**, S.B. Majumder, Electrophoretically Deposited $Na_3V_2(PO_4)_3$ and its Carbonaceous Composites as Promising Cathode for Sodium-ion Batteries, ***Mater. Res. Bull.*** Vol. 170 (**2023**) 112562, *DOI: 10.1016/j.materresbull.2023.112562*
9. A. Mukherjee, M. Akhtar, J.K. Chang, **S. Banerjee**, SB Majumder, Reduced graphene oxide and carbon nanotube anchored NASICON-type NaTi2 (PO4)3 nanocomposite anodes for high-rate performance sodium-ion batteries, ***Mater. Chem. Phy.*** Vol. 303 (**2023**) 127733; *DOI: 10.1016/j.matchemphys.2023.127733*
10. A. Mukherjee, **S. Banerjee**, S.B. Majumde, Improvement of sodium storage performance of N-doped carbon coated $NaTi_2(PO_4)_3$ derived from polyvinyl pyrrolidone, ***J Mater Sci: Mater Electron***, Vol. 34 (**2023**)1602; *DOI: 10.1007/s10854-023-10982-x*

11. K. Mazumder, E. Bittrich, B. Voit, **S. Banerjee**, Sulfur-Rich Polyimide/TiO_2 Hybrid Materials with a Tunable Refractive Index, ***ACS Omega***, Vol. 8 (**2023**) 43236-43242
12. B. Ghanti, R. Kamble, S. Roy**, S. Banerjee,** Synthesis and characterization of sulfonated polytriazoles utilizing 1,4-bis(4-azido-2-(trifluoromethyl)phenoxy)benzene for the proton exchange membrane applications, ***J. Polym. Sci.***, Vol.61 (**2023**) 1792-1806
13. K. Majumder, H. Komber, E. Bittrich, B. Voit, **S Banerjee,** Synthesis and characterization of poly(1,2,3-triazole)s with inherent high sulfur content for optical applications, ***J. Polym. Sci.***, Vol. 61 (**2023**) 1778-1791
14. A. Ghorai, **S. Banerjee,** Phosphorus-containing aromatic polymers: Synthesis, structure, properties and membrane-based applications, ***Prog. Polym. Sci.*** Vol. 138 (**2023**) 101646, *DOI: 10.1016/j.progpolymsci.2023.101646*
15. R. Moi, A. Ghorai, K. Maity, **S. Banerjee**, K Biradha, Correlation of Structures with Proton Conductivity of 1D Coordination Polymers: Higher Proton Conductivity Due to Synergy of Encapsulated Sulfate Ions and Water Molecules, ***Cryst. Growth Des.*** Vol. 22 (**2022**) 7215-7220
16. M. Mazo, R. Khudobin, N. Balabaev, N. Belov, V. Ryzhikh, R. Nikiforov, R.Chatterjee, **S. Banerjee,** Structure and Free Volume of Fluorine-containing Polyetherimides with Pendant Di-tert-butyl Groups Investigated by Molecular Dynamics Simulation, ***Polymer,*** Vol. 258 (**2022**) 125318; *DOI: 10.1016/j.polymer.2022.125318*
17. S. K. Bhattacharyya, S. Nandi, T. Dey, S. K. Ray, M. Mandal, NC Das, **S. Banerjee,** Fabrication of a Vitamin B12-Loaded Carbon Dot/Mixed-Ligand Metal Organic Framework Encapsulated within the Gelatin Microsphere for pH Sensing and In Vitro Wound Healing Assessment, ***ACS Appl. Bio Mater***. Vol. 5 (**2022**) 5693-5705
18. K. Mazumder, H. Komber, E. Bittrich, K. Uhlig, B. Voit, **S. Banerjee,** Sulfur-rich Polyimides Containing Bis(3-(trifluoromethyl)phenyl)thiophene for High-Refractive-Index Applications, ***Macromolecules***, Vol. 55 (**2022**) 9766-9779
19. S. Roy, B. Ghanti, D. Ghosh, D. Pradhan, B. Voit, **S. Banerjee,** Sterically Hindered Pyridine-Linked Sulfonated Polytriazoles: Fabrication of Membranes and Investigation of Single Cell Fuel Cell Performance, ***ACS Appl. Polym. Mater.*** Vol. 4 (**2022**) 7450-7462
20. R. Kamble, A. Ghorai, B. Ghanti, D. Pradhan, **S. Banerjee,** Fabrication of high proton conducting composite membranes from amino group functionalized MOF and semi-fluorinated sulfonated poly(arylene ether sulfone)s, ***Eur. Polym. J.*** Vol. 179 (**2022**) 111574; *DOI:10.1016/j.eurpolymj.2022.111574*
21. S. K. Bhattacharyya, I. Das Jana, A. Girigoswami, Tamal Dey, **S. Banerjee**, S. K. Ray, A. Mondal, N. C. Das, **S. Banerjee,** Ho3+-Doped Carbon Dot/Gelatin Nanoparticles for pH-Responsive Anticancer Drug Delivery and Intracellular Cu2+ Ion Sensing, ***ACS Appl. Nano Mater.*** Vol. 5 (**2022**) 11809-1822
22. A. Ghorai, A. Sahoo, S. Baitalik, **S. Banerjee**, Polytriazoles: Proton-Exchange Membrane Properties, Molecular Logic Gates, and Modeling of Stimuli-Responsive Behaviors, ***ACS Appl. Polym. Mater.*** Vol. 4 (2022) 5583-5595
23. A. Ghorai, **S. Banerjee**, Phosphorus containing fluoro-sulfonated polytriazole membranes with high proton conductivity: Understanding microstructural and thermomechanical behaviours as a

function of degree of sulfonation, ***Macromol. Chem. Phy.*** Vol. 224 (**2023**) 2200031; *DOI:10.1002/macp.202200031*

24. K. Mazumder, H. Komber, E. Bittrich, B. Voit, **S. Banerjee**, Sulfur containing high refractive index poly(arylene thioether)s and poly(arylene ether)s, ***Macromolecules,*** Vol.55 (**2022**)1015-1029
25. S. Roy, B. Ghanti, D. Ghosh, D. Pradhan, B. Voit, **S. Banerjee**, Sterically Hindered Pyridine-Linked Sulfonated Polytriazoles: Fabrication of Membranes and Investigation of Single Cell Fuel Cell Performance, ***ACS Appl. Polym. Mater.*** Vol. 4 (**2022**) 7450 – 7462
26. D. Chakraborty, A. Ghorai, P. Bhanja, **S. Banerjee**, A. Bhaumik, High proton conductivity in a charge carrier induced Ni(II)-metal-organic framework, ***New J. Chem.*** Vol. 46 (**2022**)1867-1876
27. A. Ghorai, R. Kamble, **S. Banerjee**, Trifluoromethyl functionalized sulfonated polytriazoles from diphenylphosphine oxide-based dialkyne via click polymerization: Effect of high content of phosphorus on the proton exchange membrane properties, ***Eur. Polym. J.*** Vol. 162 (**2022**) 110869; *DOI:10.1016/j.eurpolymj.2021.11*
28. S.K. Bhattacharyya, I.D. Jana, N. Pandey, D. Biswas, A. Girigoswami, T Dey,.S. Banerjee, S.K. Ray, A. Mondal, G. Mukherjee, N.C. Das,.**S. Banerjee**, Ho3+-Doped Carbon Dot/Gelatin Nanoparticles for pH-Responsive Anticancer Drug Delivery and Intracellular Cu2+ Ion Sensing, ***ACS Appl. Nano Mater.*** Vol. 5 (**2022**)11809-11822
29. A. Mukherjee, D. Das, **S. Banerjee**, S.B. Majumde, Synthesis and electrochemical performance of in-situ and ex-situ carbon- coated Na2Ti3O7, as a promising anode for sodium-ion batteries, ***Electrochemical Science Advances***, (**2022**); *DOI: 10.1002/elsa.202100118*
30. A. Singh, R. Chaterjee, A. Ghorai, **S. Banerjee**, Membrane Properties of Sulfonated Polytriazoles with Molecular Branching, ***Polym. Eng. Sci.*** Vol. 61 (**2021**) 3190-3199
31. D. Chakraborty, A. Ghorai, A. Chowdhury, **S. Banerjee**, A. Bhaumik, A novel tetradentate phosphonate ligand based Ni-MOF as high performance proton conducting material for fuel cell application, ***Chem. Asian J.*** Vol. 16 (**2021**)1562-1569
32. S. S. Banerjee, **S. Banerjee**, S. Wießner, A. Janke, G. Heinrich, A. Das, New Route to Highly Stretchable and Soft Inorganic–Organic Hybrid Elastomers Using Polydimethylsiloxane as Crosslinker of Epoxidized Natural Rubber, ***Macromol. Mater. Eng.*** Vol. 306 (**2021**) 2100380; *DOI:10.1002/mame.202100380*
33. A. Mukherjee, S. Mondal, D. Das, **S. Banerjee**, S.B. Majumder, Surface modified sodium titanate as low voltage anode for sodium rechargeable cell with superior electrochemical properties, ***Mater. Lett.*** Vol. 301 (**2021)** 130219; *DOI: 10.1016/j.matlet.2021.130219*
34. A. Ghorai, S. Roy, S. Das, H. Komber, M.M. Ghangrekar, B. Voit, **S. Banerjee**, Preparation of Sulfonated Polytriazoles with a Phosphaphenanthrene Unit via Click Polymerization: Fabrication of Membranes and Properties Thereof, ***ACS Appl. Polym. Mater.*** Vol. 3 (**2021**) 4127- 4138
35. D. Dera, R. Chatterjee, **S. Banerjee**, Aromatic polyamide nonporous membranes for gas separation application, ***e-Polymers*** Vol. 21(**2021**)108-130
36. A. Mohanty, U. P. Singh, A. Ghorai, **S. Banerjee**, R. J. Butcher, Metal-Organic Frameworks Derived From Semi-rigid Anthracene Based Ligand and Sulfonates: Proton Conductivity and Dye Degradation Studies, ***Cryst. Eng. Comm.*** Vol. 23 (**2021**) 684-693

37. I. D. Jana, P. Kumbhakar, S. Banerjee, C. C. Gowda, N. Kedia, S. K. Kuila, **S. Banerjee**, N. C. Das, A. K. Das, I. Manna, C. S. Tiwar, A. Mondal, Development of a copper-graphene nanocomposite based transparent coating with antiviral activity against influenza virus, ***ACS Appl. Nano Materials,*** Vol. 4 (**2021**) 352-362
38. S. Saha, **S. Banerjee**, Effect of Sulfonic Acid Functionalized Polysilsesquioxane on New Semifluorinated Sulfonated Polytriazole Composites and Investigation of Proton Exchange Membrane Properties, ***Polym. Eng. Sci.*** Vol. 61 (**2021**) 55-67
39. H. Satpathi, D. Pospiech, **S. Banerjee**, B. Voit, New trivalent phosphorus containing poly(arylene ether)s as alternative reactants for the Mitsunobu reaction, ***Eur. Polym. J***. Vol. 140 (**2020**)110045; *DOI: 10.1016/j.eurpolymj.2020.110045*
40. S. K. Bhattacharyya, M. Dule, R. Paul, J. Dash, Md. Anas, T. K. Mandal, N. C. Das, **S. Banerjee**, Carbon dots-gelatin nanocomposite hydrogel for pH-responsive drug delivery and pH sensing application, ***ACS Biomaterials Sci.Eng.*** Vol. 6 (**2020**) 5662-5674
41. R. Mukherjee, A. K. Mandal, **S. Banerjee**, Sulfonated Poly(arylene ether sulfone) Functionalized Polysilsesquioxane Hybrid Membranes With Enhanced Proton Conductivity, ***e-Polymers*** Vol. 20 (**2020**) 430-442
42. S. Roy, A. Ghorai, H. Komber, B. Voit, **S. Banerjee,** Synthesis of 2,2´-Hindered Pyridine Containing Semifluorinated Polytriazoles and Investigation for Low Temperature Proton Exchange Membrane Application with Enhanced Oxidative Stability, ***Eur. Polym. J.*** Vol. 136 (**2021**)109898; *DOI:10.1016/j.eurpolymj.2020.109898*
43. R. Chatterjee, A. G. Kumar, R. Nikiforov, V. Ryzhikh, N. Belov, V. Padmanabhan, Y. Yampolskii, **S. Banerjee**, Novel semi-fluorinated poly(ether imide)s with benzyl ether side groups:Synthesis, physicochemical characterization, gas transport properties and simulation, ***Eur. Polym. J.*** Vol. 135 (**2020)**109879; *DOI: 10.1016/j.eurpolymj.2020.109879*
44. R. Moi, A. Ghorai, **S. Banerjee**, K. Biradha, Amino and Sulfonate Functionalized Metal-Organic Framework for Fabrication of Proton Exchange Membranes with Improved Proton Conductivity, ***Cryst. Growth Des.*** Vol. 20 (**2020**) 5557-5563
45. A. Ghorai, S. Roy, S. Das, H. Komber, M. M. Ghangrekar, B. Voit, **S. Banerjee**, Chemically Stable Sulfonated Polytriazoles Containing Trifluoromethyl and Phosphine Oxide Moieties for Proton Exchange Membranes, ***ACS Appl. Polym. Mater.*** Vol. 2 (**2020**) 2967-2979
46. S. C. Pal, S. Chand, A. G. Kumar, P. G. M. Mileo, I. Silverwood, G. Maurin, **S. Banerjee**, S. M. Elahi, M. C., A Co (II)-Coordination Polymer for Ultrahigh Superprotonic Conduction: An atomistic Insight through Molecular Simulations and QENS Experiments, ***J. Mater. Chem. A*** Vol. 8 (**2020**) 7847-7853
47. A. Mandal, A. Ghorai, **S. Banerjee,** Sulfonated Polysilsesquioxane-Polyimide Composite Membranes: Proton Exchange Membrane Properties, ***Bull. Mater. Sci.*** Vol. 43 **(2020)**192; *DOI: 10.1007/s12034-020-02158-8*
48. A. G. Kumar, S. Saha, B. K. Tiwari, M.M. Ghangrekar, A. Das, R. Mukherjee, **S. Banerjee**, Sulfonated co-poly(ether imide)s with alkyne Groups: Thermally Crosslinking Through Alkyne-Azide Click Reaction and Studies on Proton Exchange Membrane Properties and Microbial Fuel Cell Performance**)**, ***Polym. Eng. Sci.*** Vol. 60 (**2020**) 2097-2110

49. S. P. Moreno, P. Sharan, J. Engelke, H. Gumz, U.Oertel, P. Wang, **S. Banerjee**, R. Klajn, B. Voit, A. Lederer, D. Appelhans, Light-driven proton transfer triggering adaptive, cyclic and temporal switching of enzymatic nanoreactors, ***Small,*** Vol.16 (**2020**) 2002135; *DOI: 10.1002/smll.202002135*
50. D. A. John, **S. Banerjee**, K. Biswas, Nanocomposite material characterization of solid state fractional capacitor, ***IEEE Trans. Electron Devices*** Vol. 67 (**2020)**136-1142
51. S. Roy, S. Saha, A. G. Kumar, A. Ghorai, **S. Banerjee**, Synthesis and characterization of new sulfonated co-polytriazoles and their proton exchange membrane properties, ***J. Appl. Polym Sci.*** Vol. 137 (**2020)** 48514; *DOI: 10.1002/app.48514*
52. A. Ghorai, A. K. Mandal, **S. Banerjee,** Synthesis and characterization of new phosphorus containing sulfonated polytriazoles for proton exchange membrane application, ***J. Polym. Sci.*** Vol. 58 (**2020)** 263- 279
53. R. Chatterjee, A. Singh, A. G. Kumar, B. Voit, **S. Banerjee,** Star-shaped sulfonated poly(ether triazole)s: Proton exchange membrane properties, ***Eur. Polym. J.*** Vol. 123, **2020**, pp. 109443; *DOI:10.1016/j.eurpolymj.2019.109443*
54. A. Ghorai, A. G. Kumar, **S. Banerjee**, K. Biradha Proton conducting hydrogen-bonded 3D-frameworks of imidazo-pyridine-based coordination complexes containing naphthalene disulfonates in rhomboid channels, ***Chem. Asian J.*** Vol. 14 (**2019)** 4389-4394
55. N. Mitra, D. Prasad, **S. Banerjee** Identification of molecular vibrations associated with tactic-ity in polypropylene: Density functional theory-based simulations, ***J. Polym. Sci. Part B: Polym. Phy.*** Vol. 57 (**2019)**1378-1385
56. A. Singh, A. G. Kumar, S. Saha, R. Mukherjee, S. Bisoi, **S. Banerjee,** Synthesis and characterization of chemically stable sulfonated copoly(triazole imide)s with high proton conductivity, ***Polym. Eng. Sci.*** Vol. 59 (**2019**) 2279-2289
57. P. Das, S. Ganguly, P. P. Maity, H. K. Srivastava, M. Bose, S. Dhara, S. Bandyopadhyay, A. K. Das, **S. Banerjee**, N. C. Das, Converting waste Allium sativum peel to nitrogen and sulphur co-doped photoluminescence carbon dots for solar conversion, cell damantly, and photobleaching diligences: A path from discarded waste to value-added products, ***J. Photochem. Photobiol. B.*** Vol. 197 (**2019**)111545; *DOI: 10.1016/j.jphotobiol.2019.111545*
58. P. Das, S. Ganguly, T. Agarwal, P.P. Maity, S. Ghosh, S. Choudhary, S. Choudhary, S. Gangopadhyay, T.K. Maiti, S. Dhara, **S. Banerjee**, N.C. Das, Heteroatom doped blue luminescent carbon dots as a nano- probe for targeted cell damantly and anticancer drug delivery vehicle, ***Mater. Chem. Phy.*** Vol. 237 (**2019**) 121860; *DOI: 10.1016/j.matchemphys.2019.121860*
59. S. Ganguly, P. Das, S. Das, U.K. Ghorai, M. Bose, S. Ghosh, M. Mondal, A.K. Das, **S. Banerjee**, N.C. Das, Microwave assisted green synthesis of Zwitterionic photolumenescent N-doped carbon dots: an efficient 'on-off' chemosensor for tracer Cr(+6) considering the inner filter effect and nano drug-delivery vector, ***Colloids and Surfaces A*** Vol. 579 (**2019**)123604; DOI: 10.1016/j.colsurfa.2019.123604
60. A. Adhikary, J. Roy, A.G. Kumar, **S. Banerjee**, K. Biswas, An impedimetric Cu-polymer sensor based conductivity meter for precision agriculture and aquaculture applications, ***IEEE Sensors J.*** Vol. 19 (**2019)**12087–12095

61. A.G. Kumar, S. Saha, H. Komber, B.R. Tiwari, M.G. Ghangrekar, B. Voit, **S. Banerjee**, Trifluoromethyl and benzyl ether side groups containing novel sulfonated co-poly(ether imide)s: Application in microbial fuel cell, ***Eur. Polym. J.*** Vol. 118 (**2019)** 451-464
62. S. Ganguly, P. Das, **S. Banerjee**, N.C. Das, Advancement in science and technology of carbon dot-polymer hybrid composites: a review, ***Funct. Compos. Struct.*** Vol. 1, **2019**, pp. 022001; DOI: 10.1088/2631-6331/ab0c80
63. P. Das, S. Ganguly, **S. Banerjee**, N. C. Das, Graphene based emergent nanolights: A short review on the synthesis, properties and applications, ***Res. Chem. Intermed.*** Vol. 45 (**2019)** 3823-3853
64. A. K. Mandal, S. Bisoi, **S. Banerjee,** Effect of phosphaphenanthrene skeleton in sulfonated polyimides for proton exchange membrane application, ***ACS Appl. Polym. Mater.*** Vol. 1 (**2019)** 893-905
65. P. Das, S. Ganguly, S. Ghosh, J. Baral, M. Bose, S. Choudhary, S. Gangopadhyay, A. K. Das, **S. Banerjee**, N. C. Das Biocompatible carbon dots derived from κ-carrageenan and phenyl boronic acid for dual modality sensing platform of sugar and its anti-diabetic drug release behavior, ***Int. J. Biol. Macromol.*** Vol. 132 (**2019)** 316-329
66. P. Das, S. Ganguly, M. Bose, D. Ray, S. Ghosh, S. Mandal, V. Aswal, A. K. Das, **S. Banerjee**, N. C. Das, Surface quaternized nanosensor as an one-arrow-two-hawks approach for fluorescence turns "on-off- on" bifunctional sensing and antibacterial activity, ***New J. Chem.***Vol. 43 (**2019)** 6205-6219
67. N. Belov, R. Chatterjee, R., R. Nikiforov, V. Ryzhikh, S. Bisoi, A.G. Kumar, **S. Banerjee**, Yu. Yampolskii, New poly(ether imide)s with pendant di-tert-butyl groups: Synthesis, characterization and gas transport properties, ***Sep. & Purif. Tech.*** Vol. 217 (**2019**)183-194
68. S. K. Konavarapu, A. Goswami, A. G. Kumar; **S. Banerjee**, K. Biradha, MOFs containing linear bis- pyridyl-tris-amide and angular carboxylates: Exploration of proton conductivity, water vapor and dye sorptions, ***Inorg. Chem. Front.*** Vol. 3 (**2019)**184-191
69. B. Voit, **S. Banerjee**, R. Poetzsch, Q. Wei, Highly Aromatic Polymer Architectures Designed for Optoelectronic Applications, ***Int. J. Soc. Mater. Eng. Resources*** Vol. 23, **2018**, pp.1-4.
70. P. Das, M. Bose, A. K. Das, **S. Banerjee**, N. C. Das, One-Step Synthesis of Fluorescent Carbon Dots forBio-Labeling Assay, ***Macromol. Symp.*** Vol. 382, **2018**, pp. 1800077.
71. R. Chatterjee, S. Bisoi, V. Padmanabhan, **S. Banerjee**, Aromatic polyimides containing phosphaphenanthrene skeleton: Gas transport properties and molecular dynamics simulations, ***ACS Omega*** Vol. 3, **2018**, pp. 13510-13523.
72. A. Singh, **S. Banerjee**, Synthesis and characterization of highly proton conducting sulfonated polytriazoles, ***ACS Omega*** Vol. 3, **2018**, pp. 9620-9629.
73. S. Firdaus, M. Geisler, P. Friedel, **S. Banerjee**, D. Appelhans, B. Voit, A. Lederer, Glyco-pseudodendrimers on a polyester basis: Synthesis and investigation of protein-pseudodendrimer interaction, ***Macromol. Rapid Commun.*** Vol. 39, **2018**, pp. 1800364.
74. P. Das, S. Ganguly, S. Mondal, U. K. Ghorai, P. P. Maity, S. Choudhary, S. Gangopadhyay, S. Dhara,**S. Banerjee**, N. C. Das, Dual doped biocompatible damantly r luminescent carbon dots for bio damantly, UV-active marker and fluorescent polymer composite, ***Luminescence*** Vol. 33, **2018**, pp. 1136-1145.

75. A. G. Kumar, A. Singh, H. Komber, B. Voit, B. R. Tiwari, Md. T. Noori, M. M. Ghangrekar, **S. Banerjee**, Novel sulfonated co-poly(ether imide)s containing trifluoromethyl, fluorenyl and hydroxyl groups for enhanced proton exchange membrane properties: Application in microbial fuel cell, ***ACS Appl. Mat. Interfaces*** Vol. 10, **2018**, pp. 14803-14817.
76. S. Saha, A. G. Kumar, Md. T. Noori, **S. Banerjee**, M. M. Ghangrekar, H. Komber, B. Voit, New crosslinked sulfonated polytriazoles: Proton exchange properties and microbial fuel cell performance, ***Eur. Polym. J.*** Vol. 103, **2018**, pp. 322-334.
77. A. Dutta, S. Bisoi, R. Mukherjee, R. Chatterjee, R. K. Das, **S. Banerjee**, Soluble polyimides with propeller shape triphenyl core for membrane based gas separation, ***J. Appl. Polym. Sci.*** Vol. 135, **2018,** pp. 46658.
78. P. Das, S. Ganguly, P. P. Maiti, M. Bose, S. Mondal, S. Dhara, A. K. Das, **S. Banerjee**, N. C. Das, Waste chimney oil to nanolights: A low cost chemosensor for tracer metal detection in practical field and its polymer composite for multidimensional activity, ***J. Photochem. Photobio. B: Bio.*** Vol. 180, **2018,**pp. 56-67.
79. S. K. Sahu, D. Mishra, R. P. Mahato, V. M. Sharma, S. K. Pal, **S. Banerjee**, P. Dash, Friction Stir Welding of Polypropylene Sheet, ***Eng. Sci. Technol. Intern. J.*** Vol. 21, **2018**, pp. 245-254.
80. P. Das, S. Ganguly, M. Bose, S. Mondal, S. Choudhary, S. Gangopadhyay, S. Das, A. Das, **S. Banerjee**, N. C. Das, Zinc and nitrogen ornamented bluish white luminescent carbon dots for engrossing bacteriostatic activity and Fenton based bio-sensor, ***Mater. Sci. Eng. C*** Vol. 88, **2018,** pp. 115-129.
81. P. Das, S. Ganguly, P. Maity, S. Mondal, M. Bose, S, Dhara, A. Das, **S. Banerjee**, N. C. Das, Heteroatom doped photoluminescent carbon dots as dual probe for fascinating ultrasensitive sensing of acetone in human fluids and fluorescent eabelling of human osteosarcoma cells, ***Sensor. Actuat. B-Chem.*** Vol. 266, **2018,** pp. 583-593.
82. A. K. Mandal, S. Bisoi, A. Singh, **S. Banerjee**, H. Komber, B. Voit, Sulfonated copolyimides containing trifluoromethyl and phosphine oxide moieties: Synergistic effect towards proton exchange membrane properties, ***Eur. Polym. J.*** Vol. 95, **2017,** pp. 581-595.
83. Y.P. Yampolksii, **S. Banerjee**, Effects of bulky substituents on transport properties of membrane gas separation materials, ***Pet. Chem.*** Vol. 57, **2017,** pp. 1195-1206.
84. A. Singh, S. Bisoi, **S. Banerjee**, H. Komber, B. Voit, Hydroquinone based sulfonated copolytriazoles with enhanced proton conductivity, ***Macromol. Mat. Eng.*** Vol. 302, **2017,** pp. 1700208.
85. A. Singh, A. Ganeshkumar, S. Bisoi, **S. Banerjee**, New sulfonated copoly (triazole imide) s by click chemistry with improved oxidative stability, ***New J. Chem.*** Vol. 41, **2017,** pp. 6849-6856.
86. S. Bisoi, A. K. Mandal, A. Singh, V. Padmanabhan, **S. Banerjee**, Soluble, optically transparent polyamides with a phosphaphenanthrene skeleton: synthesis, characterization, gas permeation and molecular dynamics simulations, ***Polym. Chem.*** Vol. 8, **2017**, pp. 4220-4232.
87. R. Chatterjee, S. Ghosh, S. Bisoi, **S. Banerjee**, Synthesis, characterization and gas transport properties of new semifluorinated poly(ether imide)s containing cardo moiety, ***J. Appl. Polym. Sci.*** Vol. 134, **2017,** pp. 45213.

88. S. Saha, **S. Banerjee**, H. Komber, B. Voit, Flexible diazide based new sulfonated polytriazoles: Synthesis, characterization and proton exchange membrane properties, ***Macromol. Chem. Phy.*** Vol. 218, **2017**, pp. 1700070.
89. P. Das, M. Bose, S.Ganguly, S. Mondal, A. K. Das, **S. Banerjee**, N. C. Das, Green avenue to photoluminescent carbon dots for imaging of gram-negative bacteria Escherichia coli, ***Nanotechnology*** Vol. 28, **2017,** pp. 19550.
90. D. John, **S. Banerjee**, G. Bohannan, K. Biswas, Realizing solid-state fractional capacitor using CNT- polymer composite, ***Appl. Phy. Lett.*** Vol. 110, **2017**, pp. 163504.
91. P. Das, S. Ganguly, M. Bose, S. Mondal, A. K. Das, **S. Banerjee**, N. C. Das, A simplistic approach to green future with eco-friendly luminescence carbon dots and their application to fluorescence nano-sensor 'turn-off' probe for selective sensing of copper ions, ***Mat. Sc. Eng. C*** Vol. C75, **2017**, pp. 1456-1464.
92. S. Bisoi, A. K. Mandal, A. Singh, **S. Banerjee**, Gas separation properties of Troeger's base-bridged polyamides, ***e-Polymers*** Vol. 17, **2017**, pp. 283-293.
93. A. Singh, A.G. Kumar, S. Bisoi, S. Saha, **S. Banerjee**, Hexafluoroisopropylidene based sulfonated new copolytriazoles: Investigation of proton exchange membrane properties, ***e-Polymers*** Vol. 17, **2017**, pp. 107-118.
94. S. Bisoi, A. K. Mandal, V. Padmanabhan, **S. Banerjee**, Aromatic polyamides containing trityl substituted triphenylamine: Gas transport properties and molecular dynamics simulations, ***J. Membr. Sci.*** Vol. 522, **2017**, pp. 77-90.
95. B. Jana, A. Ghosh, S. Maiti, D. Bain, **S. Banerjee**, H. Ghosh, A. Patra, Size of CdTe quantum dots controls the hole transfer rate in CdTe quantum dots-MEHPPV polymer nanoparticles hybrid, ***J. Phy. Chem. C*** Vol. 120, **2016**, pp. 25142-25150.
96. A. R. S. S. Kumar, F. Piana, M. Mičušík, J. Pionteck, **S. Banerjee**, B. Voit, Preparation of graphite derivatives by selective reduction of graphite oxide and isocyanate functionalization, ***Mater. Chem. Phy.*** Vol. 182, **2016**, pp. 237-245.
97. S. Saha, R. Mukherjee, A. Singh, **S. Banerjee**, Synthesis, characterization and investigation of proton exchange properties of sulfonated polytriazoles from a new semifluorinated diazide monomer, ***Polym. Eng. Sci.*** Vol. 57, **2016**, pp. 312-323.
98. A.G. Kumar, D. Bera, **S. Banerjee**, R. Veerubhotla, D. Das, Sulfonated poly(ether imide)s with fluorenyl and trifluoromethyl groups: Application in microbial fuel cell, ***Eur. Poly. J.*** Vol. 83, **2016**, pp. 114-128.
99. A. K. Mandal, D. Bera, **S. Banerjee**, Sulfonated polyimides containing triphenylphosphine oxide for proton exchange membranes, ***Mater. Chem. Phy.*** Vol. 181, **2016**, pp. 265-276.
100. R. Mukherjee, **S. Banerjee**, H. Komber, B. Voit, Carboxylic acid functionalized fluorinated sulfonated poly(arylene ether sulfone) copolymers with enhanced oxidative stability, ***J. Membr. Sci.*** Vol. 510, **2016**, pp. 497-509.
101. A. Singh, **S. Banerjee**, H. Komber, B. Voit, Synthesis and characterization of highly fluorinated sulfonated polytriazoles for proton exchange membrane application, ***RSC Adv.*** Vol. 6, **2016**, pp. 13478- 13489.

102. S. Sohail, E.A. Mistri, A. Khan, **S. Banerjee**, K. Biswas, Fabrication and performance study of BST/Teflon nanocomposite thin film for low voltage electrowetting devices, ***Sensor Actuat. A-Phys.*** Vol. 238, **2016**, pp. 122-132.

103. S. Ghosh, **S. Banerjee**, 9-Alkylated adamantl-based poly(ether imide)s and their gas transport properties, ***J. Membr. Sci.*** Vol.497, **2016**, pp. 172-182.

104. E. A. Mistri, **S. Banerjee**, H. Komber, B. Voit, Structure-property correlation of semifluorinated 6- membered co-SPIs for proton exchange membrane, ***Eur. Poly. J.*** Vol. 73, **2015**, pp. 466-479.

105. D. Bera, V. Padmanabhan, **S. Banerjee**, Highly gas permeable polyamides based on substituted triphenylamine, ***Macromolecules*** Vol. 48, **2015**, pp. 4541-4554.

106. P. Bandyopadhyay, **S. Banerjee**, Spiro [adamantl-9,9'-xanthene] containing fluorinated poly(ether- amide)s: Synthesis, characterization and gas transport properties, ***Eur. Polym. J.*** Vol. 69, **2015**, pp. 140- 155.

107. S. Bisoi, D. Bera, P. Bandyopadhyay, **S. Banerjee**, Effect of bulky groups on gas transport properties of semifluorinated poly(ether amide)s containing pyridine moiety, ***Eur. Polym. J.*** Vol. 66, **2015**, pp. 419- 428.

108. S. Saha, E.I. Mistri, D. Bera, **S. Banerjee**, Cardo adamantl based semifluorinated co-poly(arylene ether)s: Synthesis, characterization and dielectric properties, ***Mater. Chem. Phy.*** Vol. 152, **2015**, pp.167- 176.

109. A. Ganesh Kumar, D. Bera, E. A. Mistri, **S. Banerjee**, Triphenyl amine containing high proton conducting novel sulfonated aromatic polyimide as proton exchange membranes, ***Eur. Poly. J.*** Vol. 60, **2014**, pp. 235-246.

110. D. Bera, P. Bandyopadhyay, S. Ghosh, **S. Banerjee**, V. Padmanabhan, High gas permeable aromatic polyamides containing adamantane substituted triphenylamine, ***J. Membr. Sci.*** Vol. 474, 2014, pp.20-31.

111. P. Bandyopadhyay, **S. Banerjee**, Synthesis, characterization and gas transport properties of polyamide-tethered polyhedral oligomeric silsesquioxane (POSS) nanocomposites, ***Ind. Eng. Chem. Res.*** Vol.53, **2014**, pp 18273-18282.

112. R. Mukherjee, **S. Banerjee**, H. Komber, B. Voit, High proton conducting fluorinated sulfonated poly(arylene ether sulfone)s copolymers with side chain grafting, ***RSC Adv.*** Vol. 4, **2014**, pp. 46723-46736.

113. H. Satpathi, D. Pospiech, **S. Banerjee**, B. Voit, Decomposition and combustion studies of phosphine oxide containing aromatic polyethers, ***Polym. Degrad. Stab.*** Vol. 107, **2014**, pp. 53-63.

114. S. Ghosh, **S. Banerjee**, Fluorinated poly(arylene ether)s with aliphatic chain appended cardo moiety: Synthesis and gas transport properties, ***J. Membr. Sci.*** Vol. 470, **2014**, pp. 535-546.

115. P. Bandyopadhyay, D. Bera, S. Ghosh, **S. Banerjee**, Synthesis, characterization and gas transport properties of cardo bis(phenylphenyl) fluorene based semifluorinated poly(ether amide)s, ***RSC Adv.*** Vol. 4, **2014**, pp. 28078-28092.

116. E. A. Mistri, **S. Banerjee**, Cross-linked sulfonated poly(ether imide)/silica organic–inorganic hybrid Materials: Proton exchange membrane properties, ***RSC Adv.*** Vol. 4, **2014**, pp. 22398-22410.

117. A. Singh, R.Mukherjee, **S. Banerjee**, H. Komber, B. Voit, Sulfonated polytriazoles from a new fluorinated quadriazide monomer and investigation of their proton exchange properties, ***J. Membr. Sci.*** Vol. 469, **2014**, pp. 225-237.

118. A. Ghosh, **S. Banerjee**, Sulfonated fluorinated-aromatic polymers as proton exchange membranes(A Review), ***e-Polymers*** Vol. 14, **2014**, pp. 227-257.

119. P. Sarkar, A. K. Mohanty, P. Bandyopadhyay,S. Chattopadhyay, **S. Banerjee**, Proton exchange properties of flexible diamine based new fluorinated sulfonated polyimides, ***RSC Adv.*** Vol.4, **2014**, pp.11848-11858.

120. S. Ghosh, D. Bera, P. Bandyopadhyay, **S. Banerjee**, Effect of cardo cyclohexylidene moiety on gas transport properties of fluorinated poly(arylene ether)s, ***Eur. Polym. J.*** Vol.52, **2014**, pp. 207-217.

121. A. K. Mohanty,**S. Banerjee**, H. Komber, B. Voit, Imidoaryl biphenol based new fluorinated sulfonated poly(arylene ether sulfone) copolymers for proton exchange membrane materials, ***Solid State Ion.*** Vol. 254, **2014**, pp. 82-91.

122. S. K. Masiul Islam, P. Banerji, **S. Banerjee**, Electrical bistability, negative differential resistance and carrier transport in flexible organic memory device based on polymer bilayer structure, ***Org. Electron.*** Vol. 15, **2014**, pp. 144-149.

123. D. Bera, P.Bandyopadhyay, S. Ghosh, **S. Banerjee**, Gas transport properties of aromatic polyamides containing adamantly moiety, ***J. Membr. Sci.*** Vol. 453, **2014**, pp. 175-191.

124. A. K. Mohanty, A. Ghosh, P. Sawai, K. Pareek, **S. Banerjee**, A. Das, P. Pötschke, B. Voit, Electromagnetic interference shielding effectiveness of MWCNT-filled poly (ether sulfone) and poly (ether imide) based nanocomposites, ***Polym. Eng. Sci.*** Vol. 54, **2014**, pp. 2560-2570.

125. T. Koley, P. Bandyopadhyay, A. K. Mohanty, **S. Banerjee**, Synthesis and characterization of new aromatic poly(ether imide)s and their gas transport properties, ***Eur. Polym. J.*** Vol. 49, **2013**, pp. 4212- 4223.

126. P. Bandyopadhyay, D. Bera, S. Ghosh, **S. Banerjee**, Di-tert-butyl containing semifluorinated poly(ether amide)s: Synthesis, characterization and gas transport properties, ***J. Membr. Sci.*** Vol.447, **2013**, pp. 413-423.

127. E. A. Mistri, A. K. Mohanty, **S. Banerjee**, H. Komber, B. Voit, Naphthalene dianhydride based semifluorinated sulfonated copoly(ether imide)s: Synthesis, characterization and proton exchange properties, ***J. Membr. Sci.*** Vol.441, **2013**, pp. 168-177.

128. R. Mukherjee, A. K. Mohanty, **S. Banerjee**, H. Komber, B. Voit, Phthalimidine based new fluorinated sulfonated poly(arylene ether sulfone)s copolymer proton exchange membranes, ***J. Membr. Sci.*** Vol.435, **2013**, pp. 145-154.

129. A. K. Mohanty, E. A. Mistri, **S. Banerjee**, H. Komber, B. Voit, Highly fluorinated sulfonated poly(arylene ether sulfone) copolymers: synthesis and evaluation of proton exchange membrane properties, ***Ind. Eng. Chem. Res.***Vol.52, **2013**, pp. 2772-2783.

130. D. Bera, P. Bandyopadhyay, **S. Banerjee**, New semifluorinated aromatic copoly(ether amide)s containing heterocyclic moiety and a comparative study of gas transport propereties with the homopolymers ***Adv. Sc. Eng. Med.*** Vol. 5, **2013**, pp. 1-12.

131. P. Bandyopadhyay, D. Bera, **S. Banerjee,** Synthesis, characterization and gas transport properties of semifluorinated new aromatic polyamides, ***Sep. Puri. Tech.*** Vol.104, **2013**, pp. 138-149.

132. S. Ghosh, P. Bandyopadhyay, A.K. Mohanty, **S. Banerjee,** Gas transport properties of poly(arylene ether)s containing phthalimidine moiety in the main chain, ***Sep. Puri. Tech.*** Vol.103, **2013**, pp. 222-229.

133. S. Chakraborty, B. Krause, J. Pionteck, **S. Banerjee**, B. Voit, Influence of different carbon nanotubes on the electrical, mechanical and thermal properties of melt mixed poly(ether sulfone)-multi walled carbon nanotube composites, ***Compos. Sci. Technol.*** Vol.72, **2012**, pp. 1933-1940.

134. S. Gupta, D. D. Agarwal, **S. Banerjee**, Lithium Aluminium Layered Double Hydroxides: Synthesis and application in poly (vinyl chloride), ***Intern. J. Polym. Mater.*** Vol. 61, **2012**, pp. 985-998.

135. S. K. Sen, **S. Banerjee,** High Tg and processable fluorinated polyimides containing benzoisoindoledione unit and evaluation of their gas transport properties, ***RSC Adv.*** Vol. 2, **2012**, pp. 6274- 6289.

136. E. A. Mistri, A. Mohanty, **S. Banerjee,** Synthesis and characterization of new fluorinated Poly(ether imide) copolymers with controlled degree of sulfonation for proton exchange membranes, ***J. Membr. Sci.*** Vol. 411/412, **2012**, pp. 117-129.

137. A. Ghosh, S. K. Sen, **S. Banerjee**, B. Voit, Solubility improvements in aromatic polyimides by macromolecular engineering (A review), ***RSC Adv.*** Vol. 2, **2012**, pp. 5900-5926.

138. A. Mohanty, E. A. Mistri, A. Ghosh, **S. Banerjee,** Synthesis and characterization of novel fluorinated poly(arylene ether sulfone)s containing pendant sulfonic acid groups for proton exchange membrane materials, ***J. Membr. Sci.*** Vol. 409/410, **2012**, pp. 145-155.

139. D. Bera, P.Bandyopadhyay, B. Dasgupta, **S. Banerjee**, Gas transport properties of new aromatic poly(ether amide)s containing cyclohexylidene moiety, ***J. Membr. Sci.*** Vol. 407/408, **2012**, pp. 116-127.

140. S. Kundu, A. Kumar, **S. Banerjee**, P. Banerji, Electrical properties and barrier modification of GaAs MIS Schottky device based on MEH-PPV organic interfacial layer, ***Mat. Sci. Semicn. Proc.*** Vol. 15, **2012**, pp. 386-392.

141. S. Chatterjee, **S. Banerjee**, P. Banerji, New Polymer Acceptor for Solar Cells Application, ***Syn. Metal.*** Vol. 162, **2012**, pp. 566-572.

142. H. Komber, S. Chakraborty, B. Voit, **S. Banerjee**, Degree of sulfonation and microstructure evaluation of post-sulfonated polyethersulfone studied by NMR spectroscopy, ***Polymer*** Vol. 53, **2012**, pp. 1624-1631.

143. S. Gupta, D. D. Agarwal, S.Banerjee, Role of hydrotalcites cations in thermal stabilization of poly (vinyl chloride), ***Intern. J. Polym. Mater.*** Vol. 61, **2012**, pp.124-135.

144. B. Dasgupta, **S. Banerjee**, Preparation and evaluation of gas transport properties of poly(ether imide)– POSS nanocomposite membranes, ***Adv. Sci. Lett.*** Vol.10, **2012**, pp. 14-23.

145. A. Ghosh, **S. Banerjee**, D. Y. Wang, H. Komber, B. Voit, Synthesis, characterization and properties of new siloxane grafted copolyimides, ***J. Appl. Polym. Sci.*** Vol. 123, **2012**, pp. 2959-2967.

146. B. K. Singh, N.K. Shrivastava, P. Kar, **S. Banerjee**, B. B. Khatua, Electrical and mechanical properties of acrylonitrile-butadiene-styrene/ multiwall carbon nanotube nanocomposites prepared by melt-blending, ***J. Appl. Polym. Sci.*** Vol. 124, **2012**, pp. 3165-3174.

147. A. Ghosh, D. Bera, D. Y. Wang, H. Komber, A. K. Mohanty, **S. Banerjee**, B. Voit, Synthesis, characterization and properties of new semifluorinated poly(arylene ether phosphine oxides)s, ***Macromol. Mater. Eng.*** Vol. 297, **2012**, pp. 145-154.

148. F. Chen, D. Bera, **S. Banerjee**, S. Agarwal, Low dielectric constant polyimide nanomats by luorine inning, ***Polym. Adv. Technol.*** Vol. 23, **2012**, pp. 951-957.

149. P. Bandyopadhyay, D. Bera, **S. Banerjee**, Semifluorinated, organo-soluble new aromatic poly(ether amide)s: Synthesis, characterization and gas transport properties, ***J. Membr. Sci.*** Vol. 382, **2011**, pp. 20- 29.

150. S. Chatterjee, **S. Banerjee**, P. Banerji, Synthesis of fluorene based new ter-copolymers: electrochemical and optical properties, J***.M.S.-Pure Appl. Chem.*** Vol. 48, **2011**, pp. 780-788.

151. S. Chatterjee, **S. Banerjee**, P. Banerji, Synthesis and characterization of fluorine based π-conjugated ter-copolymers, ***Synth. Metal*** Vol.161, **2011**, pp. 263-270.

152. H. Satpathi, A. Ghosh, **S. Banerjee**, H. Komber, B. Voit, Synthesis and characterization of new hyperbranched poly(arylene ether phosphine oxide)s from a novel semifluorinated AB2 monomer and comparison of properties with linear analogues, ***Eur. Polym. J.*** Vol. 47, **2011**, pp. 196-207.

153. A. K. Mohanty, S. K. Sen, **S. Banerjee**, Processable high Tg high strength fluorinated new poly(imidoaryl ether)s containing imido aryl unit in the main chain, ***J. Appl. Polym. Sci.*** Vol. 122, **2011**, pp. 3038-3047.

154. A. Ghosh, **S. Banerjee**, H. Komber, L. Häußler, K. Schneider, B. Voit, New semifluorinated siloxane grafted copolyimides and comparison of properties with linear analogues, ***Macromol. Mater. Eng.*** Vol. 296, **2011**, pp. 391-400.

155. D. Bera, B. Dasgupta, S. Chatterjee, S. Maji, **S. Banerjee**, Synthesis, characterization and properties of semifluorinated organo-soluble new aromatic polyamides, ***Polym. Adv. Technol.*** Vol. 23, **2010**, pp. 77- 84.

156. B. Dasgupta, **S. Banerjee**, A study of gas transport properties of semifluorinated poly (ether imide) membranes containing cardo diphenylfluorene moieties, ***J. Membr. Sci.*** Vol. 362, **2010**, pp. 58-67.

157. S. K. Sen, **S. Banerjee**, Spiro-biindane containing fluorinated poly(ether imide)s: Synthesis, characterization and gas separation properties, ***J. Membr. Sci.*** Vol. 365, **2010**, pp. 329-340.

158. A. Ghosh, S. K. Sen, B. Dasgupta, **S. Banerjee**, B. Voit, Synthesis, characterization and gas transport properties of new poly(imide siloxane) copolymers from 4,4'-(4,4'-Isopropylidene diphenoxy)bis(phthalic anhydride), ***J. Membr. Sci.*** Vol. 364, **2010**, pp. 211-218.

159. A. Ghosh, **S. Banerjee**, B. Voit, New silicone grafted copoly(ether imide) from 4,4'-(hexafluoro- isopropylidene)diphthalic anhydride, ***J.M.S.-Pure Appl. Chem***. Vol. 47, **2010**, pp. 1-6.

160. A. Ghosh, **S. Banerjee**, H. Komber, A. Lederer, K. Sahre, L. Hauessler, B. Voit**,** Extremely high molar mass hyperbranched poly(arylene ether)s from a new semifluorinated AB2 monomer by an unusual AB2+A2 polymerization approach, ***Macromolecules*** Vol. 43, **2010**, pp. 2846–2854.

161. A. Ghosh, **S. Banerjee**, L. Hauessler, B. Voit, New fluorinated poly(imide siloxane) random and block copolymers with variation of siloxane loading, ***J.M.S.-Pure Appl. Chem.*** Vol. 47, **2010**, pp. 671-680.

162. S. Maji, **S. Banerjee**, Synthesis and characterization new meta connecting processable semifluorinated poly (ether amide)s and their pervaporation properties to benzene/cyclohexane mixtures, ***J. Membr. Sci.*** Vol. 360, **2010**, pp. 380-388.

163. M. D. Ganguly, **S. Banerjee**, Fluorinated high-performance polymers: synthesis of poly(arylene ether)s and aromatic polyimides containing trifluoromethyl groups (A review), ***Prog. Polym. Sci.*** Vol. 35, **2010**, pp. 1022-1077.

164. K. Pareekh, A. Ghosh, S. K. Sen, **S. Banerjee**, Synthesis, characterization and properties of new fluorinated poly(imide siloxane) copolymers from 4,4'-(hexafluoro-isopropylidene)diphthalic anhydride, ***Des. Monomers Polym.*** Vol. 13, **2010**, pp. 221-236.

165. S.K. Sen, **S. Banerjee**, Gas transport properties of fluorinated poly (ether imide) membranes containing phthalimidine moiety in the main chain, ***J. Membr. Sci.*** Vol. 350, **2010**, pp. 53-61.

166. S. Chatterjee, S. Maji, S. K. Sen, B. Dasgupta, **S. Banerjee**, P. Banerji, Benzotrifluoromethyl group substituted poly(para-phenylenevinylene): effect on solubility, optical and electronic properties, ***J. Appl. Polym. Sci.*** Vol. 116, **2010**, pp. 1603-1610.

167. S. Maji, S. K. Sen, **S. Banerjee**, Synthesis of new poly(biphenylene oxide) with pendent trifluoromethyl group, ***J.M.S.-Pure Appl. Chem.*** Vol. 47, **2010**, pp.154-159.

168. A. Ghosh, **S. Banerjee**, B. Voit, Synthesis, characterization and comparison of properties of novel fluorinated Poly (imide siloxane) copolymers from Anthracene moiety, ***High Perform. Polym.*** Vol. 22, **2010**, pp. 28-41.

169. A. Ghosh, S. Maji, **S. Banerjee**, B. Voit, Co-poly(aryl ether sulfone)s containing phthalimidinemoiety in the main chain Polym. Adv. Technol. Vol. 21, **2010**, pp. 794-801.

170. A. Ghosh, **S. Banerjee**, Synthesis and characterization of fluorinated Polyimides derived from Novel 9, 10-bis-3''-trifuoromethyl-p-aminobiphenyl ether) anthracene, ***High perform. Polym.*** Vol.21, **2009**, pp. 173-186.

171. R. Srivastava, **S. Banerjee**, D. Jehnichen, B. Voit, F. Boehme, In situ preparation of polyimide composites based on functionalized carbon nanotubes, ***Macromol. Mater. Eng.*** Vol. 294, **2009**, pp. 96– 102.

172. A. Mousa, **S. Banerjee**, Nano layered silicate on mechanical properties of polypropylene composites, ***J. Pure Appl. Sci.*** Vol. 6, **2009**, pp. 21-34.

173. S. Maji, R. Asrey, S.Kumar, C. Saxena, N. Kumar, K. D. Vyas, **S. Banerjee**, Polymer coated piezoelectric quartz crystal sensor for sensing nerve agent siamulent dimethyl methylphosphonate vapor, ***J. Appl. Polym. Sci.*** Vol. 116, **2009**, pp. 3708-3717.

174. B. Dasgupta, S. K. Sen, **S. Banerjee**, Aminoethyl aminopropylisobutyl POSS – polyimide nanocomposite membranes and their gas transport properties, ***Mat. Sc. Eng. B.*** Vol. 168, **2009**, pp. 30-35.

175. S. Maji, **S. Banerjee**, Preparation of new semifluorinated aromatic poly(ether amide)s with markedly improved pervaporation performance of benzene / cyclohexane mixture, ***J. Membr. Sci.*** Vol. 349, **2009**, pp. 145-155.

176. S. Maji, N. C. Pradhan, **S. Banerjee**, Separation of benzene/cyclohexane mixture using semifluorinated aromatic poly(ether amide) membranes with and without cardo unit in the main chain, ***Sep. Puri. Tech.*** Vol. 70, **2009**, pp. 128-135.

177. B. Dasgupta, S. K. Sen, **S. Banerjee**, Gas transport properties of fuorinated poly (ether imide) membranes containing Indan moiety in the main chain, ***J. Membr. Sci.*** Vol. 345, **2009**, pp. 249-256.

178. S. K. Sen, B .Dasgupta, **S. Banerjee**, Effect of introduction of heterocyclic moieties into polymer backbone on gas transport properties of fluorinated poly(ether imide) membranes, ***J. Membr. Sci.*** Vol. 343, **2009**, pp. 97-103.

179. A. Mohanty, S. K. Sen, S. Maji. A. Ghosh, **S. Banerjee**, Synthesis, characterization, and comparison of properties of new fluorinated poly(arylene ether)s containing phthalimidine moiety in the main chain, ***Polym. Adv. Technol.*** Vol. 21, **2009**, pp. 767-773.

180. S. Gupta, D. D. Agarwal, **S. Banerjee**, Thermal stabilization of poly (vinyl chloride) in presence of hydrotalcites, Zeolites and conventional stabilizer system, ***J. Vinyl Additive Technol.*** Vol. 15, **2009**, pp.164-170.

181. **S. Banerjee**, H. Komber, L. Hauessler, B. Voit, Novel semifluorinated hyperbranched poly(arylene ether)s, ***Macromol. Chem. Phy.*** Vol. 210, **2009**, pp. 1272-1282.

182. S. Maji, S. Sen, **S. Banerjee**, Synthesis and characterization of semi-fluorinated aromatic co-poly (ether amide)s, ***J.M.S.-Pure Appl. Chem.*** Vol. 46, **2009**, pp. 484-492.

183. A. Ghosh, **S. Banerjee**, H.Komber, K. Schnider, L. Hauessler, B. Voit, Synthesis and characterization of fluorinated poly(imide siloxane) block copolymers, ***Eur. Polym. J.*** Vol. 45, **2009**, pp. 1561-1569.

184. S. K. Sen, S. Maji, B. Dasgupta, S. Chatterjee, **S. Banerjee**, Organosoluble poly(ether imide)s from phthalimidine based and trifluoromethyl substituted bis(ether amine), ***J. Appl. Polym. Sci.*** Vol. 113, **2009**, pp.1550-1559.

185. S. Gupta, **S. Banerjee**, D.D. Agarwal, Synergistic combination of metal stearates and β-diketones with hydrotalcites in poly(vinyl chloride) stabilization, ***J. Appl. Polym. Sci.*** Vol. 112, **2009**, pp.1056-1062.

186. S. Maji, S. Sen, B. Dasgupta, S.Chatterjee, **S. Banerjee**, Synthesis and characterization of new poly(ether amide)s based on a novel cardo monomer, ***Polym. Adv. Technol.*** Vol. 20, **2009**, pp. 384-392.

187. S. Maji, **S. Banerjee**, Synthesis and characterization of novel fluorine containing aromatic co-poly(ether amide), ***J. Polym. Mater.*** Vol. 25, **2008**, pp. 375-385.

188. M. Aggarwal, S. Maji, S. Sen, B. Dasgupta, S. Chatterjee, A. Ghosh, **S. Banerjee**, New poly (arylene ether)s containing phenolphthalein anilide, ***J. Appl. Polym. Sci.*** Vol. 112, **2008**, pp.1226-1233.

189. A. Ghosh, **S. Banerjee**, New fluorinated poly(ether imide) Containing anthracene moiety J. Polym. Mater.Vol. 25, **2008**, pp. 117-124.

190. S. Gupta, D. D. Agarwal, **S. Banerjee**, Synthesis and characterization of hydrotalcites: Potential thermal stabilizers for PVC, ***Ind. J. Chem.*** Vol. 47 A, **2008**, pp.1004-1008.

191. A. Ghosh, **S. Banerjee**, Structure prorperty relation in fluorinated Co-Poly(imide siloxane)s, ***Polym. Adv. Technol.***Vol.19, **2008**, pp. 1-8.

192. A. Ghosh, **S. Banerjee**, Thermal, mechanical, and dielectric properties of novel Fluorinated Co-Poly(imide siloxane)s, ***J. Appl. Polym. Sci.*** Vol.109, **2008**, pp. 2329-2340.

193. P. Swai, **S. Banerjee**, Electromagnetic interference shielding effectiveness of conductive graphite filled Polypropylene and PEI based composites, ***J. Appl. Polym. Sci.*** Vol.109, **2008**, pp. 2054-2063.

194. J. K. Mishra, **S. Banerjee**, S. Bhuina, P. Banerji, Photoluminescence studies on porous silicon/polymer heterostructure, ***J. Lumin.*** Vol.128, **2008**, pp. 1169-1174.

195. S. Maji, **S. Banerjee**, Synthesis characterization of organo-soluble novel semi-fluorinated poly (ether amide)s, ***J. Appl. Polym. Sci.*** Vol.108, **2008**, pp. 1356-1364.

196. A. Ghosh, **S. Banerjee**, Synthesis characterization and comparison of properties of novel fluorinated poly (imide siloxane) copolymers, ***J. Appl. Polym. Sci.*** Vol.107, **2008**, pp. 1831-1841.

197. **S. Banerjee**, Synthesis and characterization of hyperbranched poly(aryl ether) from a novel AB2 monomer, ***J. Polym. Mater.*** Vol. 24, **2008**, pp. 247-254.

198. A. Ghosh, **S. Banerjee**, Synthesis, characterization and comparison of properties of novel fluorinated polyimides derived from bisphenol-a-di(phthaleic anhydride), ***J.M.S.-Pure Appl. Chem.*** Vol.45, **2007**, pp. 578-584.

199. A. Digal, A. Ghosh, **S. Banerjee**, Synthesis and characterization of novel poly (arylene ether)s from 4, 4'-thiodiphenol, ***J.M.S.-Pure Appl. Chem.*** Vol.45, **2007**, pp. 212-217.

200. V. Kute, **S. Banerjee**, Polyimides 7: Synthesis, characterization and properties of novel soluble semi- fluorinated poly(ether imide)s, ***J. Appl. Polym. Sci.*** Vol.103, **2007**, pp. 3025-3044.

201. A. K. Salunke, A. Ghosh, **S. Banerjee**, Synthesis and characterization of novel poly(arylene ether)s based on 9,10-bis(4-fluoro-3-trifluoromethylphenyl) anthracene and 2,7- bis(4-fluoro-3-trifluoromethyl phenyl) fluorine, ***J. Apple. Polym. Sci.*** Vol.106, **2007**, pp. 664-672.

202. P. K. Gutch, **S. Banerjee**, Poly-schiff bases 6. Synthesis and characterization of novel soluble fluorine- containingpolyether azomethines, **J. Polym. Mater.** Vol. 23, **2007**, pp. 373-378.Year 2005

203. A. K. Salunke, M. Sharma, V. Kute, **S. Banerjee**, Synthesis of novel co-poly(ether ether ketone)s: Property evaluation and microstructure analysis by NMR, ***J. Appl. Polym. Sci.*** Vol.96, **2005**, pp.

204. **S. Banerjee**, N. Sood, V. Kute, A. K. Salunke, D. K. Jaiswal, Synthesis and characterization of novel poly(arylene ether)s from 1,3-bis(4-hydroxy benzyl)benzene, ***J.M.S.-Pure Appl. Chem.*** Vol. A41, **2004**, pp. 1123-1133.

205. **S. Banerjee**, M. K. Madhra, V. Kute, Polyimides 6: Synthesis, Characterization and Comparison of Properties of Novel Fluorinated Poly(ether imide)s, ***J. Appl. Polym. Sci.*** Vol. 93, **2004**, pp. 821 –832.

206. **S. Banerjee**, G. Maier, C. Danenberg, J. Springer, Gas permeabilities of poly(aryl ether)s with terphenyl unit in the main chain, ***J. Membr. Sci.*** Vol. 229, **2004**, pp. 63-71.

207. M. K. Madhra, M. Sharma, **S. Banerjee**, Polyimides 4: Synthesis and characterization of fluorinated co-polyimides, ***J. Appl. Polym. Sci.*** Vol. 93, **2004**, pp. 235-246.

208. P. Pandey, R.S. Chauhan, R.P.Semwal, **S. Banerjee**, R. Jain, Density based phase separation asymmetric polyethylene-poly(dimethyl siloxane) blend membranes: Properties & Preparation, J**.** ***Appl. Polym. Sci.*** Vol. 91, **2004**, pp. 2278-2287.

209. **S. Banerjee**, Low dielectric constant polymers, ***Intrn. J. Plast. Technol.*** Vol. 6, **2003**, pp. 102-106.

210. V. Kute, **S. Banerjee 2003** Novel semi fluorinated poly(ether imide)s derived from 4(p-aminophenoxy)-3-trifluoromethyl-4'-aminobiphenyl, ***Macromol. Chem. Phys.*** Vol. 204, **2003**, pp. 2105- 2112.

211. **S. Banerjee**, G. Maier, M. Burger, Novel poly(arylene)s with pendent trifluoromethyl groups by Ni(0)- catalyzed coupling reaction, ***J. Polym. Mater.*** Vol. 20, **2003**, pp.377-386.

212. P. K. Gutch, **S. Banerjee**, D. K. Jaiswal, Synthesis and Properties of Novel Aromatic Polyamides Derived from 2,2-Bis [4-(4-amino-2-fluorophenoxy) phenyl] hexafluoro propane and Aromatic dicarboxylic Acids, ***J. Polym. Sci. Part A: Polym. Chem.*** Vol. 89, **2003**, pp. 691-696.

213. **S. Banerjee**, M. K. Madhra, A. K. Salunke, D. K. Jaiswal, Synthesis and properties of fluorinated polyimides 3. Derived from Novel 1,3-bis [3'-trifluoromethyl-4'(4"-amino benzoxy) benzyl] benzene and 4,4 – bis [3'-trifluoromethyl-4'(4-amino benzoxy) benzyl] biphenyl, ***Polymer*** Vol. 44, **2003**, pp.

214. Z. Xu, C. Danenberg, J. Springer, **S. Banerjee**, G. Maier, Novel poly(arylene ether) as membranes for gas separation, ***J. Membr. Sci.*** Vol. 205, **2002**, pp. 23-31.

215. Z. Xu, C. Danenberg, J. Springer, **S. Banerjee**, G. Maier, Gas permeation of polymers containing fluorine moieties, ***Chem. Mater.*** Vol. 14, **2002**, pp. 3271-3276.

216. **S. Banerjee**, A. K. Salunke, M. K. Madhra, S. Prabha, Synthesis and characterization of poly(aryl ether)s derived from 1,3-bis (4-fluorobenzotrifluoride) benzene, ***J. Polym. Mater.*** Vol. 19, **2002**, pp. 295- 302.

217. M. Madhra, A. K. Salunke, S. Prabha, **S. Banerjee**, Synthesis and properties of fluorinated polyimides derived from Novel 2,6-bis(3'-trifluoromethyl-p-aminobiphenylether)pyridine and 2,5-bis (3'-trifluoro methyl-p-aminobiphenyl ether)thiophene, ***Macromol. Chem. Phys.*** Vol. 203, **2002**, pp.1238- 1248.

218. A. K. Salunke, M. Madhra, M. Sharma, **S. Banerjee**, Synthesis and characterization poly(arylene ether)s derived from 4,4'-bishydroxy biphenyl and 4,4'-bishydroxy terphenyl, ***J. Polym. Sci. Part A: Polym. Chem.***Vol. 40, **2002**, pp. 55-69.

219. **S. Banerjee**, M. K. Madhra, A. K. Salunke, G. Maier, Synthesis and properties of fluorinated polyimides 1. Derived from novel 4,4"-bis(aminophenoxy)-3, 3"-trifluoromethyl terphenyl, ***J. Polym. Sci. PatrA: Polym. Chem.*** Vol. 40, **2002**, pp. 1016-1027.

220. G. Maier, **S. Banerjee**, J. Haussmann, R. Sezi, High temperature polymers for advanced microelectronics, ***High Perform. Polym.*** Vol. 13, **2001**, pp. 107-117.

221. B. Singh, G. K. Prasad, **S. Banerjee**, The reaction of thiodiglycol on metal impregnated carbon, ***Carbon,*** Vol. 39, **2001**, pp. 2131-2142.

222. P.K.Gutch, **S. Banerjee**, D.C. Gupta, D. K. Jaiswal, Poly-Schiff bases: Part 5. Synthesis and characterization of novel soluble fluorine containing polyether azomethines, ***J. Polym. Sci. Patr A: Polym. Chem.*** Vol. 39, **2001**, pp. 383-388.

223. **S. Banerjee**, G. Maier, Novel pol(arylene) ether with pyridine element in the main chain, ***J. Polym. Mater.Vol.*** 18, **2001**, pp. 61-68.

224. **S. Banerjee**, G. Maier, A.K.Salunke, M. Madhra, A new high Tg high strength poly(aryl ether) with pendent trifluoromethyl groups, ***J. Appl. Polym. Sci.*** Vol. 82, **2001**, pp. 3149-3156.

225. G. Maier, J.Haußmann, M. Dietlmeier, **S. Banerjee**, Fluorinated Heteroaromatic Polyethers for Low Dielectric Constant / High Temperature Applications, ***Macromol. Symp.*** Vol. 142, **1999**, pp. 85-99.

226. G. Maier, J.Haußmann, M. Dietlmeier, **S. Banerjee**, Fluorinated Heteroaromatic Polyethers for Low Dielectric Constant / High Temperature Applications, ***Macromol. Symp.*** Vol. 142, **1999**, pp. 85-99.

227. **S. Banerjee**, G. Maier, Novel high Tg high strength poly(aryl ether)s, ***Chem. Mater.*** Vol. 11, **1999**, pp. 2179-2184.

228. **S. Banerjee**, G. Maier, M. Burger, Novel poly(arylene)s with pendent trifluoromethyl groups, ***Polym. Mat. Sci. Eng.*** Vol. 80 / 1, **1999**, pp. 98-99.

229. **S. Banerjee**, G. Maier, M. Burger, Novel Poly(arylene ether)s with pendent trifluoromethyl groups, ***Macromolecules*** Vol. 32, **1999**, pp. 4279-4289.

230. **S. Banerjee**, P. K. Gutch, C. Saxena, Poly-Schiff bases: Part 4. Synthesis and characterization of polyetherazomethines, ***Des. Monomers Polym.*** Vol. 2, **1999**, pp. 135-142.

231. G. Maier,**S. Banerjee**, R. Hecht, J. M. Schinder, Polyarylethers with pendent trifluoromethyl substituents as low dielectrics for microelectronics, ***Polym. Prepr.*** Vol. 39 / 2, **1998**, pp. 798-799.

232. **S. Banerjee**, M. Burger, G. Maier, Novel polyarylethers containing terphenyl moieties in the backbone and pendent trifluoromethyl groups, ***Polym. Prepr.*** Vol 39 / 2, **1998**, pp. 855-856.

233. B. Singh, **S. Banerjee**, S. M. Baronia, N. B. S. N. Rao, Evaluation of butyl rubber against sulfur mustard by a modified static diffusion method, ***J. Polym. Mater.*** Vol. 15, **1998**, pp. 57-60.

234. L. V. R. Murthy,**S. Banerjee**, B. Singh, R. S. Chauhan, Studies of sulfur mustard and its oxygen analog in nitrile and natural rubber blends, ***J. Appl. Polym. Sci.*** Vol. 65, **1997**, pp. 731-738.

235. R. S. Chauhan, L. V. R. Murthy, **S. Banerjee**, N. Singh, Transport and mechanical properties of polyethyleneterephthalate films with reference to sulfur mustard, ***Polym. Intern.*** Vol. 42, **1997**, pp. 251- 254.

236. **S. Banerjee**, Ram Asrey, C. Saxena, K. D. Vyas, A. Bhattacharya, Kinetics of diffusion of dimethylphosphonates and water through polydimethylsiloxane membrane using coated piezoelectric sensor, ***J. Appl. Polym. Sci.*** Vol. 65, **1997**, pp. 1789-1794.

237. P. P. Kundu, **S. Banerjee**, D. K. Tripathy, NMR and FTIR spectroscopic studies on the blends of polychloroprene with polyethylene vinylacetate, ***Intrn. J. Polym. Mater.*** Vol. 32, **1996**, pp. 125-134.

238. P. P. Kundu, D. K.Tripathy, **S. Banerjee**, Studies on miscibility of the blends of polychloroprene with polyethylenemethacrylate copolymer, ***Polymer*** Vol. 37, **1996**, pp. 2423-2432.

239. **S. Banerjee**, Ram Asrey, K. D. Vyas, A. Bhattacharya, Quartz piezoelectric crystal detector for sensing organophosphorus compounds and study of diffusion of chemical pollutants through elastomeric membranes, ***J. Polym. Mater.*** Vol. 13, **1996**, pp. 29-33.

240. R.P. Semwal, **S. Banerjee**, Study of diffusion of sulfur mustard and oxygen mustard through polypropylene and biaxial oriented polypropylene films by FTIR-ATR spectroscopic method, ***J. Appl. Polym. Sci.*** Vol. 60, **1996**, pp. 29-36.

241. **S. Banerjee**, C. Saxena, Poly-Schiff bases: Part 3. Synthesis and characterization of polyesterazomethines, J***. Polym. Sci. Part A: Polym. Chem***. Vol. 34, **1996**, pp. 3565-3572.

242. **S. Banerjee**, P. K. Gutch, C. Saxena, D. C. Gupta, Poly-Schiff bases: Part 2. Synthesis and characterization of polyetherketoimines, ***Eur. Polym. J.*** Vol. 32, **1996**, pp. 661-664.

243. **S. Banerjee**, R. P. Semwal, S. Agarwal, Measurements of diffusivities of SM and its analog OM in cured butyl, nitrile and natural rubber sheets by weight gain and FTIR-ATR spectroscopic methods, ***J. Appl. Polym. Sci.*** Vol. 57, **1995**, pp. 1483-1490.

244. **S. Banerjee**, P. K. Gutch, C. Saxena, Polyether azomethines: Part 1. Synthesis and characterization, ***J. Polym. Sci. Part A: Polym. Chem.*** Vol. 33, **1995**, pp. 1715-1725.

245. **S. Banerjee**, S. K. Palit, S. Maiti, Phosphorus containing polymers: Part 5. Polyazoxyphosphonates, ***Colloid Polym. Sci.*** Vol. 272, **1994**, pp. 1203-1207.

246. **S. Banerjee**,S.K.Palit, S.Maiti, Phosphorus containing polymers: Part4. Polyimido phosphoanhydrides, ***Indian J. Chem.*** Vol. 33B, **1994**, pp. 43-47.

247. **S. Banerjee**, S. K. Palit, S. Maiti, Phosphorus containing polymers: Part 3. Polyimidophosphonates, ***J. Polym. Sci. Polym. Chem.*** Vol. 32, **1994**, pp. 219-227.

248. S. Maiti, **S. Banerjee**, S. K. Palit, Phosphorus containing polymers (A review), ***Prog. Polym. Sci.*** Vol. 18, **1993**, pp. 217-261.

249. **S. Banerjee**, S. K. Palit, S. Maiti, Phosphorus containing polymers: polyazomethine phosphonates, ***J. Polym. Mater.*** Vol. 9, **1992**, pp. 219-228.

250. S. Bannerjee, S. K. Plait, S. K. Rahaman, S. Maiti, Synthesis of ploy(terephthaloylphosphine), ***Die Angew. Makromol. Chem.*** Vol. 199, **1992**, pp. 1-6.

B. Book:

1. **S. Banerjee,** Handbook of Specialty Fluorinated Polymers, *Preparation, Properties, and Applications*, 1st Edition – April 24, **2015** (Elsevier, New York) Six Chapters, 329 pages (***Hardback ISBN: 9780323357920; eBook ISBN: 9780323369961***).

C. Book Chapters:

1. Ghorai, **S. Banerjee**, Recent Developments in Aromatic Polymer-Based Proton Exchange Membranes ***In: Progress in Polymer Research for Biomedical, Energy and Specialty Applications***, Ed. A. Srinivasan, S. Murugesan, A. Mahendran, (CRC Press, Taylor & Francis**)**, Chapter 9, pp. 19-224 **(2022)**
2. S. K. Bhattacharyya, S. Maiti, N. C. Das, **S. Banerjee**, Antibacterial and Antiviral Functional Materials Based on Polymer Nanocomposites, ***In: Antibacterial and Antiviral Functional Materials***, Volume 1, Chapter 6, pp. 171-202 (DOI**:** 10.1021/bk-2023-1458.ch006).
3. S. K. Bhattacharyya, **S. Banerjee**, N. C. Das, Polymer-graphene composite in hydrogen production ***In: Polymer Nanocomposites Containing Graphene, Preparation, Properties, and Applications,*** Ed. M. Rahaman, L. Nayak, I. A. Hussein, N. C. Das (Elsevier), pp. 639-682 (**2022**)

4. P. Das, **S. Banerjee**, N. C. Das, Polymer composites for aerospace engineering ***In: Polymer Nanocomposites Containing Graphene, Preparation, Properties, and Applications,*** Ed. M. Rahaman, L. Nayak, I. A. Hussein, N. C. Das (Elsevier), pp. 683-711 (**2022**)
5. **S. Banerjee**, A. Ghorai, S. Roy, B. Voit, Preparation of high-performance polymers by click chemistry and their membrane-based application, ***In:*** Advances in Chemistry Research, James C. Taylor (Editor) (Nova Science Publishers, Inc., NY, USA), Vol. 64, Chapter 2, (**2020**).
6. B. D. Ghosh, **S. Banerjee**, A. Alentiev, I. Ronova, Y. Yampolskii, **2021,** Polyimides with bulky groups: synthesis, characterization and physical properties, ***In: Imidic Polymers and Green Polymer Chemistry: New Technology and Developments in Process and Products***, Ed. A.K. Haghi (Apple Academic Press) Chapter 2 (**2020**) pp.23-87.
7. **S. Banerjee**, D. Bera, Polycondensation Materials Containing Bulky Side Groups: Synthesis and Transport Properties, ***In: Membrane Materials for Gas and Vapor Separation: Synthesis and Application of Silicon-Containing Polymers***, First Edition. Ed. Y. Yampolskii and E. Finkelshtein (John Wiley & Sons, Ltd.), Chapter 7 (**2017**) pp. 223-269.
8. **S. Banerjee**, A. Ghosh, Semifluorinated Aromatic Polymers and Their Properties, ***In: Fluorinated Polymers: Volume 1: Synthesis, Properties, Processing and Simulation***, Ed. B. Ameduri, H. Sawada (Royal Soc. Chemistry), Chapter 5 (**2017**) pp. 103-189.
9. **A.** Ghosh, **S. Banerjee**, B. Voit, Aromatic Hyperbranched Polymers: Synthesis and Application, ***In: Porous Carbons Hyperbranched Polymers Polymer Solvation. Advances in Polymer Science***, Ed. T. Long, B. Voit, O. Okay O. (Springer, Chem), Vol. 266, (**2014**) pp. 27-124.
10. **S. Banerjee**, S. K. Sen, A. Ghosh, B. Dasgupta, Recent Advances in Fluorinated Polyimides: Synthesis and Properties, ***In: Polymer Synthesis***, Ed. E. Kowsari (Nova Science Publishers, Inc. NY, USA) Chapter 4, (**2012**) pp. 53-98.
11. **S. Banerjee**, S. Maji, High-Performance Processabe Aromatic Polyamides, ***In: High Performance Polymers and Engineering Plastics***, Ed. V. Mittal (Wiley, and Scrivener Publishing, USA) Chapter 5, (**2011**) pp. 111-166.
12. P. K. Dutta, **S. Banerjee**, S. Maiti, New generation high performance polymers by displacement polymerization, ***In: Handbook of Engineering Polymeric Materials***, Ed. N. P. Cherimisinoff (Marcel Dekker, USA), Chapter 2 (**1997**) pp.35-60.

D. Patents:

1. D. A. John, **S. Banerjee**, K. Biswas, A CNT-Epoxy Nanoparticle Based Fractional Capacitor and a Method for Fabricating the Same, Ref. TEMP/E-1/41756 /**2016**-KOL, *Patent No. IN201631042210A, Date of Filing: 09/12/2016, Indian Patent No. 427741 (Granted on: 30/03/2023).*
2. Adhikary, **S. Banerjee**, S. Sen, K. Biswas, Two Electrode Impedeometry Based System for Measuring Conductivity of Liquid Medium, Ref. TEMP/E-1/42519/**2017**-KOL, *Patent No. IN201731041880A, Date of Filing: 22/11/2017.*
3. **S. Banerjee**, S. Ghosh, Cardo poly(ether imide)s and membranes thereof for efficient gas separation, *Ref. 782/KOL/2015 Publication date: 01/12/2017, Indian Patent No. 352959 (Granted on: 03/12/2020).*

4. S. Sohail, A. Khan, K. Biswas, E. A. Mistri, **S. Banerjee,** Low voltage Electrowetting-On-Dielectric (EWOD) actuation using Nanocomposite thin film, *Ref. 466/KOL/2014, Publication date: 26/08/2016,* Indian Patent No. 350764 *(Granted on: 03/11/2020).*
5. **S. Banerjee**, R. Galluci, G. Haralur, W. Kernick, G. Kailasam, U. M. Vakil Conductive wire compromising polysiloxane /polyimide copolymer blend, US2007298255(A1), US2011180299(A1), WO2007149639(A9), AT445903(T), TW200809878(A), *EP2030207(B1), granted on October 14, 2009 and CN101506907(B), granted on August 24, 2011, US8,491,997 (B2), granted on July 23, 2013.*
6. **S. Banerjee**, R. Galluci, G. Haralur, W. Kernick, G. Kailasam, U. M. Vakil Process for making polysiloxane / polyimide copolymer blends US2007299213(A1), EP2029660(A1), WO2007149638(A1), CN101506271(A), TW200806751(A), *US8168726 (B2), granted on January 5, 2012; EP2029660(B1), granted on December 19, 2012 and CN101506271(B), granted on May 30, 2012.*
7. **S. Banerjee**, R. Galluci, G. Haralur, W. Kernick, G. Kailasam, U. M. Vakil Polysiloxane / polyimide copolymers and blends thereof WO2007149636(A1), CN101506270(A), TW200808873(A), EP2029658(A1), *US8071693(B2), granted on December 6, 2011*.
8. S. M. Fisher, **S. Banerjee**, A. V. S. Kishore, A. Dhanabalan, V. R. Mhetar, A. Namjoshi Composition and method for making polyarylene ether copolymers, *US20080246186A1*.
9. D. N. Marjit, S. Prakash, M. P. Kaushik, **S. Banerjee**, C. Saxena, M. J. Mendki, K. M. Rao, R. V. Swamy, A. B. Samui, P. C. Deb A Process Development of slow release glossy insecticidal paint for insect control Indian patent (SRIP / DRDE), *Pat. No. 178869*.

20. Participation as speaker in different national/international conferences

A. National

Sl.No.	Date	Title of Conference or Institution	Title of presentation
1.	2 Nov 2023	National Conference on 'Recent Advancement in Materials and Manufacturing-2023 (RAMM-2023) 2-3 November 2023, CIPET: SARP-LARPM, Bhubaneswar	An Overview of High-performance Polymers for Membrane-based Applications
2.	8 Dec. 2020	Recent Trends in Materials Science and Technology (NCMST-2020), 7-9 December 2020, Indian Institute of Space Science and Technology, Thiruvananthapuram	Recent Development of Polymer Electrolyte Membranes for Fuel Cell
3.	27 Nov 2010	Colloquium on Perspectives in Polym. Sci. & Technol., 27 November 2010, IACS Jadavpur	Semifluorinated high performance polymers: their scope
4.	15 Dec 2008	DAAD+Humboldt Alumni Workshop, 14-16 December 2008, Chandipore, India.	Structure-Property Relationship in Poly(ether imide)s
5.	11 Feb 2006	"Polymer 2006" 10-12 February 2006, IACS, Kolkata	High temperature low-k material
6.	16 Jan 2003	DRDO Workshop on Adv. Polym. Mater., 16-17 January 2003, DMSRDE, Kanpur	Hyperbranched polyethers for chemical sensor applications
7.	14 Sept 2002	National seminar on polymer: A smart material, 14 September 2002, M.N.N.I.T, Allahabad	Polymers in electronics
8.	1 Dec	Macro-2000, National Symposium on Polymers And	Gas permeabilities of polymers with

	2000	Composite, 1-2 December 2000, DMSRDE, Kanpur, India	pendent trifluoromethyl groups. 1: Poly(aryl ether)s
9.	12 Oct 1998	Werkstoffwoche, 12-15 October 1998, Munich, Germany	High Temperature dielectric polymers for microelectronics
10	13 March 1997	Recent advances in synthesis & manufacturing processes of plastics, rubbers & fibers, 13-14 March 1997, Indore, India	Polymers for gas separation
11.	10 March 1995	Intensive course on polymer materials, 10-12 March 1995, SGSITS Indore, India	Polymers for protection against chemical warfare agents
12.	29 Dec 1990	27 th Annual convention of chemist, 26-30 December 1990, Magadg university, Bodh Gaya	Novel phosphorus containing polymers: Synthesis and characterization

B. International

Sl.No.	Date	Title of Conference or Institution	Title/Subject of presentation (if made)
1.	17 Oct 2024	*International conference on Polymers for Advanced Technology (APA 2024), 16-18 October, 2024, Jaipur.*	Synthesis and characterization of sulfur-containing polymers: An overview
2.	10 Dec 2023	*17th International Conference on Polymer Science and Technology, SPSI-MACRO-2023, December 10-13, 2023, Guwahati*	An Overview of High-performance Polymers for Membrane-Based Applications
3.	30 Nov 2023	*International Conference: Polymer Processing Society Asia-Australasia Regional Conference (PPS – 2023) Nov 29, 2023 to Dec 02, 2023 in Kovalam, Kerala, India*	All-Solid Polyelectrolyte Membranes for Fuel Cell Application
4.	7 Oct 2023	*International Conference on "Advancement in Sustainable Materials for Energy and Environment" (ASMEE-2023 : Oct 6-7, 2023, CIPET, Raipur*	High-Performance Polymer-Membranes for Clean and Sustainable Energy: Gas Separation and Fuel-Cell Applications
5.	13Aug 023	*ACS National Meeting and Expositions, August 13-17, 2023, San Francisco, CA, USA*	Phosphorus and Pyridinyl-Linked Sulfonated Polytriazoles: Membranes for Fuel Cell Application
6.	12 Mar 2022	*International Conference on Advancements Polymeric Materials, APM 2022, 8-12 March 2022, Chennai*	The recent development on phosphorus and pyridine containing sulfonated polytriazoles: Proton exchange membrane properties
7.	28 June 2022	*European Polymer Congress (EPF 2022), 26 June to 1st July 2022, Prague, Czech Republic*	Phosphorus containing sulfonated polytriazoles via Click polymerization: Synthesis, properties and proton exchange membrane applications
8.	18 Oct 2022	*Kathmandu Humboldt-kolleg 2022 (KHK–2022) Oct 16-19, 2022, Kathmandu, Nepal*	Preparation of Sulfonated Polytriazoles With Phosphorus Containing Moieties via Click Polymerization: Proton Exchange Membrane Properties

9.	14 Feb 2020	*International Conference on Advances in Polymeric Materials, APM-2020, 13-15 Feb 2020, Bangalore, India*	High-Performance Semi-fluorinated Polymers and Their Membrane Properties
10.	10 June 2019	*European Polymer Congress (EPF-2019), 9-14 June 2019, Crete, Greece.*	New poly(ether imide) electrolyte membranes for fuel cell applications
11.	19 Feb 2019	*Indo-German Bilateral Workshop on Membranes for Water and Energy, 18-21 Feb 2019, Bhavnagar, India*	Design and Preparation of Novel Polymer Electrolyte Membranes for Fuel Cell Applications
12.	20 Dec 2018	*International Conference on Polymer Science and Technology, SPSI-MACRO 2018, 18-22 Dec 2018, Pune, India*	Synthesis and Characterization of Sulfonated Semi-fluorinated Aromatic Polytriazoles: Superior Proton Exchange Membrane Properties
13.	9 Dec 2018	*3rd International Conference on Soft Materials, ICSM 2018, 9-14 Dec 2018, Jaipur, India.*	High-Performance Polymers and Membranes Thereof for Gas Separation Application
14.	2 July 2018	*World Polymer Congress MACRO 2018, MACRO-2018, 01-05 July 2018, Cairns, Australia*	Hydroxyl groups containing sulfonated copolyimides for enhancing peroxide radical resistance and hydrolytic stability: Application in microbial fuel cell
15.	2 Feb 2018	*International Conference On Advancements in Polymeric Materials, APM-2018, 02-04 Feb 2018, Bhubaneswar*	Polymers with cardo units and membranes thereof for efficient gas separation
16.	18 Oct 2016	*Katmandu Symposium on Advanced Materials 2016, 17-20 Oct 2016, Pokhara, Nepal*	Designing cardo polymers and membranes thereof for efficient gas separation
17.	3 Oct 2016	*Fluoropolymer-2016, 2-5 Oct 2016, New Orleans, USA*	Proton conducting aromatic semi-fluorinated polymers and membranes thereof
18.	7 June 2016	*STEPI-10, Polyimides and High Performance Polymers, 6-8 June 2016, Montpellier, France*	High Performance Fluorinated Polymers and Membranes Thereof for Proton Exchange Membrane Application
19.	24 Mar 2016	*Intern. Conf. on Sci. and Eng. of Polym. Mater. (SEPM 2016), 24-27 March 2016, Monastir, Tunisia.*	Designing polymers and membranes thereof for efficient gas separation
20.	12 Feb 2016	*Intern. Conf. on Advancements in Polym. Mater. (APM-2016), 12-14 Feb 2016, CIPET, Ahmedabad, India*	Polymers with cardo and bulky pendant groups: Superior membrane materials for gas separation application
21.	23 June 2016	*European Polymer Congress (EPF-2015), 21-26 June 2015, Dresden, Germany*	Aromatic semi-fluorinated polymers for proton exchange membrane materials
22.	24 Jan 2015	*MACRO-2015, 23-26 Jan 2015, IACS Kolkata, India*	Polymers containing bulky pendant groups: Superior membrane materials for gas separation application
23.	16 Sept 2013	*Bayreuth Polymer Symposium (BPS-13), 15-17 Sept 2013, Bayreth, Germany*	High performance fluorinated polymers

24.	17 May 2013	*3rd FAPS polymer congress and MACRO-2013, 15-18 May 2013, IISC Bangalore*	Semifluorinated sulfonated high performance polymers for proton exchange membrane materials
25.	12 Dec 2012	*28th Intrn. Conf. of Polym. Process. Soc. (PPS-28), 11-14 Dec 2012, Patayya, Thailand*	Electromagnetic interference shielding effectiveness of MWCNT-filled poly(ether sulfone) and poly(ether imide) based nanocomposites
26.	15 Dec 2010	*MACRO-2010, 15-17 Dec 2010, New Delhi*	Hyperbranched poly(arylene ether)s by AB2 and an unusual AB2+A2 polymerization approach
27.	13 June 2010	*Fluoropolymer 2010, 13-16 June 2010, Meze, France*	Semi-fluorinated hyperbranched poly(arylene ether)s
28.	20 Feb 2010	*Intern. Conf. on Adv. of Polym. Mater. (APM-2010), 20-22 Feb 2010, Bhubaneswar, India*	Poly(arylene ether)s and aromatic polyimides containing trifluoromethyl groups
29.	16 Jan 2010	*2nd Intern. Conf. on Polym. Process. and Charac. (ICPPC-2010), 15-17 Jan 2010, Kottayam, India*	Gas transport properties of novel organo soluble poly(ether imide) membranes bearing Pendant trifluoromethyl groups
30.	9 Dec 2008	*Intern. Symp. on Adv. Mater. and Polym. for Aerospace and Def. Appl. (SAMPADA-2008), 8-12 Dec 2008, Pune, India.*	Semi-fluorinated polym(ether imide)s for advanced application
31.	20 Oct 2008	*Fluoromolymer 2008: Current frontiers and future trends, 19-22 Oct 2008, Charleston, USA.*	Novel Semi-Fluorinated Poly (ether imide) s with Cardo Unit in the Main Chain
32.	9 Dec 2002	*MACRO- 2002: Intern. Seminar on Frontiers of Polym. Sci.& Eng., 9-11 Dec 2002, Kharagpur*	Low dielectric constant polymers for microelectronics
33.	14 Oct 2002	*Fluoromolymer 2002: Current frontiers and future trends, 13-16 Octo 2002, Savannaha, Georgia, USA.*	Novel semifluorinated poly(ether imide)s derived from 4-aminobenzoxy-2'-trifluoro-methyl-4'(4"-amino benbenzyl)benzene

21. Ph.D. and Master thesis supervision

A. Ph. D. thesis (Supervision; 27 Completed)

Sl. No.	Name of the student	Thesis title	Degree awarding Instititution / Year
1.	Dr. Sambit Roy	*Pyridine and thiophene Containing Sulfonated Polytriazoles: Synthesis, Characterization and Proton Exchange Membrane Properties*	IIT Kharagur / 2024
2.	Dr. Swarup Krishna Bhattacharyya	*Tailor-Made Multifunctional Smart Scaffold For Target Specific Drug-Delivery and Sensing Applications*	IIT Kharagur / 2024 (Jointly. Supervisior Prof. N. C. Das
3.	Dr. Kajari Mazumder	*"Bis[3-(Trifluoromethyl)phenyl]Thiophene-Based High Refractive Index Polymers: Synthesis, Characterization and Properties*	IIT Kharagur / 2022 [(Jointly with Prof. Brigitte Voit (***DAAD sandwich program***)]

4.	Dr. Arijit Ghorai	*Phosphorus Containing Sulfonated Polytriazoles: Synthesis, Characterization and Proton Exchange Membrane Properties*	IIT Kharagur / 2022
5.	Dr. Anwesa Mukherjee	*Layered and polyanion based electrode materials for sodium rechargeable cells*	IIT Kharagur / 2022 (Jointly with Prof. SB Majumder
6.	Dr. Rimpa Chatterjee	*Synthesis and Characterization of Poly(ether imide)s with Bulky Groups: Fabrication of Membranes and their Gas Transport Properties*	IIT Kharagur / 2021 (Jointly with Prof. N>C. Das
7.	Dr. Poushali Das	*Bio-based luminescent carbon dots for sensor and biomedical applications*	IIT Kharagur / 2019
8.	Dr. Anaparthi Ganesh Kumar.	*Synthesis and Characterization of Bulky Groups Containing Semifluorinated Sulfonated Co-poly(ether imide)s for Proton Exchange Membrane Fuel Cell Application*	IIT Kharagur / 2019
9.	Dr. Sayantani Saha	*Synthesis and Characterization of New Semifluorinated Sulfonated Co-Polytriazoles with Controlled Ion Exchange Capacity and Studies on their Proton Exchange Properties*	IIT Kharagur / 2019
10.	Dr. Arun Kumar Mandal	*Phosphorus containing Proton exchange membranes*	IIT Kharagur / 2019
11.	Dr. Soumendu Bisoi	*New cardo polyamide membranes for gas separation*	IIT Kharagur / 2017
12.	Dr. Asheesh Singh	*New Fluorinated Sulfonated Polytriazoles and their Proton Exchange Membrane Properties*	IIT Kharagur / 2017
13.	Dr. Rajdeep Mukherjee	*Cardo phenolphthalein based semifluorinated sulfonated poly(arylene ether sulfone)copolymers: Proton exchange membrane materials*	IIT Kharagur / 2017
14.	Dr. Sipra Ghosh	*Synthesis, characterization and gas transport properties of cardo poly(arylene ether)s and poly(ether imide)s*	IIT Kharagur / 2016
15.	Dr. Ershad Ali Mistri	*Studies on proton exchange properties of semi-fluorinated sulfonated poly(ether imides)s*	IIT Kharagur / 2015
16.	Dr. Debaditya Bera	*Novel aromatic polyamides with bulky pendent groups and their gas transport propertie*	IIT Kharagur / 2015
17.	Dr. Partha Sarthi Bandyopadhyay	*Fluorinated poly(ether amide)s for gas separation"*	IIT Kharagur / 2015
18.	Dr. Aruna Kumar Mohanty	*Fluorinated sulfonated poly(arylene ethers)*	IIT Kharagur / 2014
19.	Dr. Shyambo Chatterjee	*New π-conjugated polymers and their application in photovoltaic devices*	IIT Kharagur / 2012 (Jt. Supervisor Prof. P. Banerji)
20.	Dr. Barnali Dasgupta	*Gas transport properties of indan and 33luorine based fluorinated poly(ether imide) membranes*	IIT Kharagur / 2011
21.	Dr. Suman Kumar Sen	*New cardo group containing fluorinated poly(ether imide)s and gas transport properties*	IIT Kharagur / 2011

22.	Dr. Samarendra Maji	*Synthesis and characterization of new semi-fluorinated aromatic poly(ether amide)s for pervaporation application*	IIT Kharagur / 2010
23.	Dr. Anindita Ghosh	*Synthesis and characterization of novel poly(ether-imide siloxane) copolymers and investigation of their properties*	IIT Kharagur / 2010
24.	Dr. Savita Gupta	*Synthesis, characterization and formulation of stabilizers in PVC processing*	Jiwaji Univ Gwalior/ 2007 (Jointly with Prof. D.D. Agarwal.
25.	Dr. Vijay Kute	*Studies on semi fluorinated polyimides*	Jiwaji Univ Gwalior/ 2005 (Co-guide: Prof. S. Prabha)
26.	Dr. Mukesh Kumar Madhra	*Synthesis and characterization of novel high temperature, high strength poly(ether imide)s with pendent trifluoromethyl groups.*	Jiwaji Univ Gwalior/ 2003 (Co-guide: Prof. S. Prabha)
27.	Dr. Salunke Arun Kashinath	*Synthesis of high temperature, Low dielectric constant poly(arylene ether)s with pendent trifluoromethyl groups*	Jiwaji Univ Gwalior/ 2003 (Co-guide: Prof. S. Prabha)

B. Master Thesis (M. Tech.)

Sl. No.	Name of the student / Progrm	Thesis title	Degree awarding Instititution / Year
1.	Nimisha Nancy Prakash (*DAAD/KOSPIE*)	*Location-Resolved Tactile Sensing By Additive-Free Triboelectric Generators Based On Bio-Degradable Polymers*	IIT Kharagpur / 2024 (Jt. with Prof. Dr. Gianaurelio Cuniberti TU Dresden)
2.	Ayan Banerjee (*DAAD/KOSPIE*)	*Digesting artificial organelles with proteinrepellant properties*	IIT Kharagpur / 2024 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden
3.	Kavipriyaa A P (*DAAD/KOSPIE*)	*Application of Lignin as a Filler in Rubber Composites*	IIT Kharagpur / 2024 (Jt. with Prof. Dr.-Ing. Sven Wießner TU/IPF Dresden)
4.	Vishal K. Prakash (*DAAD/KOSPIE*)	*Development of Hihgh Sensitive and Flexible TPU-CNT/CNc Nanocomposite Strain Sensors.*	IIT Kharagpur / 2023 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
5.	Rakesh K. Maji (*DAAD/KOSPIE*)	*Polymersomes based on Azobenzene-Containing Amphiphilic Block Copolymers: Potential Artificial Organagells*	IIT Kharagpur / 2023 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
6.	Snehasish Chakraborty	*Synthesis of Water-Based Binder and its Performance in Waterborne Anticorrosive Paints*	IIT Kharagpur / 2023 (Jt. with Tapan K Dhar from Burger paints)
7.	Hiya Surovita Saha	*Sulphonated Polytriazole based Proton Exchange Membranes for Fuel Cell Application*	IIT Kharagpur / 2022
8.	Akshay S. Salvi (*DAAD/KOSPIE*)	*Printable Supercapacitor Electrodes*	IIT Kharagpur / 2022 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
9.	Mukesh Singh (*DAAD/KOSPIE*)	*Surface Modification of Flax fibers & Subsequent fabrication and characterization of PLA- Flax fiber based green composites by Reactive Extrusion Process*	IIT Kharagpur / 2022 (Jt. with Prof. Dr. Ing. M. Stommel from TU/IPF Dresden)

10.	Bhumika Nim	*A Study of Structural Modifications Introduced to Prepare Phase Separated, High Performance Anion Exchange Membranes*	IIT Kharagpur / 2021
11.	Rinku Dutta	*Self-healing Polymers in Different Self-Healing Systems: Designs and Challenges*	IIT Kharagpur / 2021
12.	Vibhanshu Maurya (*DAAD/IIT Master)*	*Effect of e-beam irradiation on crosslink density, physical, chemical and mechanical properties of TPU blends*	IIT Kharagpur / 2020 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
13.	Chandan Mahapatra	*Synthesis and Characterization of a Novel Phosphorus-Containing Poly(ether sulfone) and Its Blends with Bisphenol-A Based Poly(ether sulfone)*	IIT Kharagpur / 2019
14.	Ashish Singh	*Surface Modification of Poly(ether imide) Materials to Enhance Their Superhydrophobicity*	IIT Kharagpur / 2019 (Jt. with Tapan K Dhar from Asian Paints)
15.	Sambit Roy	*Synthesis and characterization of sulfonated polytriazole based proton exchange membrane fuel cell*	IIT Kharagpur / 2018
16.	Priyanka Sharan (*DAAD/IIT Master)*	*Permeable polymersomes´ membrane for enzymatic reactions at neutral pH*	IIT Kharagpur / 2018 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
17.	Kajari Majumder (*DAAD/IIT Master)*	*Preparation of high refractive index (HRI) polymer nanocomposite for better light outcoupling from OLED*	IIT Kharagpur / 2018 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
18.	Mercy Jatindro Sabar	*MWCNT-poly(ether imide)s nancomposites: Studies on electrical properties*	IIT Kharagpur / 2017
19.	Gargi Ghosh	*Studies on polyimide siloxamne block copolymers*	IIT Kharagpur / 2017
20.	Sumanta Samanta (*DAAD/IIT Master)*	*Preparation and characterization of conducting polymer nanocomposites with improved thermoelectric efficiency*	IIT Kharagpur / 2017 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
21.	Agniva Dutta	*Synthesis and characterization of novel poly(ether imide)s prepared from a diamine with a propeller triphenyl amine core*	IIT Kharagpur / 2016
22.	Shamila Firdaus (*DAAD/IIT Master)*	*Glyco-pseudodendrimers on a polyester basis: Synthesis and investigation of protein-pseudodendrimer interaction*	IIT Kharagpur / 2016 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
23.	Ashish Jadav (*DAAD/IIT Master)*	*Expanded graphite/cellulose nano-crystal / thermoplastics polyurethane (TPU) composite*	IIT Kharagpur / 2015 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
24.	Rimpa Chatterjee	*Synthesis and characterization of new semifluorinated cardo poly(ether imide)s*	IIT Kharagpur / 2015
25.	Vignesh Kumar S. (*DAAD/IIT Master)*	*Self-crosslinking hyperbranched polyarylethers and their nanocomposites*	IIT Kharagpur / 2014 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
26.	Anaparthi Ganesh Kumar	*Triphenyl moiety containing non-fluorinated sulfonated aromatic polyimides for proton exchange membrane*	IIT Kharagpur / 2014
27.	Sayantani Saha	*New fluorinated poly(arylene ether)s*	IIT Kharagpur / 2014
28.	Preetom Sarkar	*Synthesis and characterization of novel sulfonated poly(ether imide)s for proton exchange membrane*	IIT Kharagpur / 2013 (Jt. with Prof. Santanu Chattopadhyay)

29.	Tapas Koley	*Semi fluorinated new aromatic poly(ether imide)s: Synthesis, Characterization & properties*	IIT Kharagpur / 2013
30.	Arunjunai Raja Shankar S. *(DAAD/IIT Master)*	*Functionalized grapheme derivatives and their TPU nanocomposites by in-situ polymerization technique*	IIT Kharagpur / 2012 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
31.	Asheesh Singh	*Studies on emulsion polymerization of acrylic monomers to control particle morphology and its impact in paint properties*	IIT Kharagpur / 2012
32.	Jasjeet Singh Kang	*Synthesis and characterization of new fluorine and carbazole based copolymers for their possible application in polymer solar cell*	IIT Kharagpur / 2012
33.	Sourav Chakraborty *(DAAD/IIT Master)*	*Preparation of polysulfone-multi walled carbon nanotube composite and synthesis of sulfonated polysulfone and its thermal behavior*	IIT Kharagpur / 2011 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
34.	Hirak Satpathi *(DAAD/IIT Master)*	*Synthesis and characterization of new semifluorinated linear and hyperbranched poly(arylene ether phosphine oxide)s from B_2 and AB_2 type monomers*	IIT Kharagpur / 2010 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
35.	Debaditya Bera	*Synthesis, characterization and properties of novel semifluorinated organo-soluble aromatic polyamides*	IIT Kharagpur / 2010
36.	Arun K. Mohanty	*Synthesis and characterization and properties of new semi fluorinated poly(arylene ether)s containing phthalimidine moiety in the main chain*	IIT Kharagpur / 2009
37.	Kapil Pareekh	*Synthesis and ch. and properties of new fluorinated poly(imide siloxane) copolymers from 4,4'-(hexafluoro-isopropylidene) diphthalic anhydride*	IIT Kharagpur / 2009
38.	Rohit Srivastav *(DAAD/IIT Master)*	*In-situ preparation of polyimide composites based on functionalized carbon nanotubes*	IIT Kharagpur / 2008 (Jt. with Prof. Dr. Brigitte Voit from TU/IPF Dresden)
39.	Mohit Agarwal	*New poly (arylene ether)s containing phenolphthalein anilide*	IIT Kharagpur / 2008
40.	Praveen Swai (M.S.)	*Electromagnetic interference shielding effectiveness of conductive graphite filled Polypropylene and PEI based composites*	IIT Kharagpur / 2028
42.	Samit Khan	*Development of clay reinforced unsaturated polyester, vinyl ester based nanocomposites*	IIT Kharagpur / 2007
43.	Anjali Digal	*Synthesis and ch. of novel poly(arylene ether)s*	IIT Kharagpur / 2027
44.	Nidhi Sood (M.Sc.)	*Synthesis and characterization of novel semifluorinated poly(arylene ether)s*	Devi Ahilya Vishwavidyalaya, Indore / 2001
45.	Pritul Srivastav (M.Sc.)	*Synthesis and characterization of hyperbranched fluorinated poly(aryl ether)*	Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal / 2001
46.	Neerja Dwivedi (M.Sc.)	*Studies on SiO_2 filled BTDA-ODA polyimide*	MIT, Gwalior / 2001
47.	Shevya Agarwal (M.Sc.)	*Effect of silica filler in PI from 6-FDA and ODA*	MIT, Gwalior / 2001

22. Scientific research /Translational reseach

A. Scientific research

i) Novel low dielectric constant materials for microelectronic applications:

a) Approach 1: Through linear polmeric materials: Low dielectric constant (~ 2.6)

Next-generation microelectronic packing requirements drive the need to produce increasingly lower constant dielectric materials while maintaining high thermal stability and ease of processing. Efforts have been focused on the direction of synthesis, characterization and property evaluation of new polymers with the goals of high thermal stability ($T_d \geq 500$ ºC) and isothermal stability at 350 ºC for several hours in the air, high mechanical strength, low water absorption rate (< 1 %), solubility in selected organic solvents, low dielectric constants (< 2.5) and low coefficients of thermal expansion. All these stringent parameters were achieved by preparing novel poly(arylene ether)s and poly(ether imide)s containing rigid terphenyl / quadriphenyl units in the polymer backbone and pendent trifluoromethyl groups. Candidate materials [poly(ether imide)s] exhibited outstanding thermo-oxidative stability up to 534 0C for 5 % weight loss, tensile strength up to 120 MPa, tensile modulus 2.54 GPa and elongation at break up to 72 % depending upon the polymer structures and precise, repeating units. The poly (arylene ether)s are highly soluble in a wide range of organic solvents, whereas the poly(ether imides) exhibited solubility in selected solvents. The polymers showed a negligibly small water absorption rate (0.3 %) even after submersion in boiling water for several days, low dielectric constant (~ 2.6), and have optical clarity. These values indicate that the candidate materials can be considered for use in numerous applications which requires robust organic materials including composites and precursors for high-performance aerospace materials as well as interlayer dielectric materials for advanced microelectronic applications. [*Macromolecules* ***32*** *(1999) 4279-4289; Chemistry of Materials* ***11*** *(1999) 2179-2184; Polymer* ***44*** *(2003) 613-622;* J. *Appl. Polym. Sci.* ***103*** *(2007) 3025-3044*]

b) Approach 2: Through hyperbranched polymeric materials: Very low dielectric constant (~ 2.2)

The preparation of low dielectric constant polymeric materials from linear poly(arylene ether)s and poly(ether imide)s were successful with all the desired properties required. However, the reduction of dielectric constant was not possible below 2.8. The hyperbranched polymers are a relatively new class of macromolecules that have gained significant attention from both academia and industry. These highly branched structures generate intrinsically void space, and that helps in a reduction in dielectric constant. With this approach new **AB2** monomers [e.g. 3,5-bis-(4-fluoro-3-trifluoromethylphenyl) phenol] were prepared. Thes monomers led to high molecular weight hyperbranched polymers by self-condensation reaction. A new synthetic approach was taken to prepared hyperbranched polymers by condensing the **AB2** monomer with different diphenols (**A2**) in different molar ratios. This novel approach resulted in high yield (71 - 91 %), and the 2:1 molar products of **AB2/A2** showed extremely high weight average molecular weights of 3730000 and 4470000 g/mol without any gelation under the specified reaction conditions. The self-condensed hyperbranched poly(arylene ether)s showed a glass transition temperature (T_g) as high as 199 ºC and a 10% weight loss temperature as high as 573 ºC in N2. Whereas the 2:1 molar products of **AB2/A2** did not show Tg up to 350 ºC, and the 10% weight loss temperature was around 550 ºC. Thin films of the hyperbranched polymers were prepared on silicon wafers via spin-coating. Smooth surfaces were obtained without any detectable feature indicating a good film quality. The

water contact angle value of the thin films indicates that the hyperbranched polymers are hydrophobic. The dielectric constant values of these hyperbranched polymers as measured were within 2.2-2.4. High hydrophobicity of the polymers combined with high thermal stability, good film-forming ability, and low dielectric constant renders these materials highly interesting for microelectronics in the field of the low dielectric constant coating. [*J. Polym. Mater. 24 (2008) 247-254; Macromol. Chem. Phy. 210 (2009) 1272-1282; Macromolecules, Vol. 43 (2010) 2846–2854; Eur. Polym. J. 47 (2011) 196-207]*

c) Approach 3: Through electro-spinning: Ultra low dielectric constant (1.4)

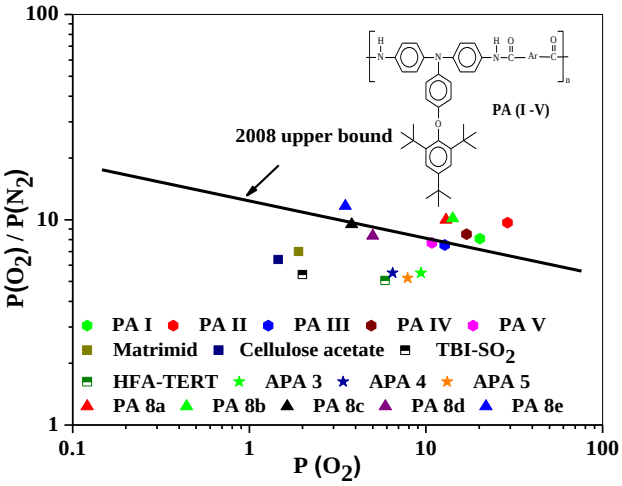
Polyimides as a polymer class cover a comprehensive property range, from very high-melting wholly aromatic polyimides to melt-processable polymers. Among various polymers studied with electrospinning, polyimides have been very interesting because they constitute an important class of polymers due to their superior thermal and chemical resistance, as well as mechanical properties that can be used in various fields. The goal of this present section of work was to prepare polyimide electro spunned nanofibers from the previously reported polyimides and investigation of their properties. The proper combination of material (i.e. fluorinated polyimides) and the processing technique (electrospinning) lead to the formation of polyimides with low dielectric constant, high thermo-oxidative stability, and glass transition temperature and high hydrophobicity. The polyimides in this work were based on 4, 4-bis [3'-trifluoromethyl-4' (4'-amino benzoxy) benzyl] biphenyl and various fluorinated and non-fluorinated dianhydrides like benzene-1,2,4,5-tetracarboxylic dianhydride (PMDA), 3,3',4,4'-biphenyltetracarboxylic dianhydride(BPDA), benzophenone-3,3',4,4'-tetracarboxylic dianhydride (BTDA) and 4,4′-(hexafluoroisopropylidene) diphthalic anhydride (6FDA). Processing of the polyimides was done in poly(amic acid) stage by two different methods – electrospinning and solution casting for comparison purposes. The processing of polyimides by electrospinning led to enhancement in mechanical properties (anhydride structure dependent) and hydrophobicity without sacrificing thermo-oxidative stability and glass transition temperatures significantly. Also, low dielectric constants (as low as 1.43) attained by a suitable combination of dianhydride (6FDA) with 4, 4-bis [3'-trifluoromethyl-4' (4'-amino benzoxy) benzyl] biphenyl diamine. [*Polym. Adv. Technol. 23(2012)951-957*]

ii) Membrane based separation

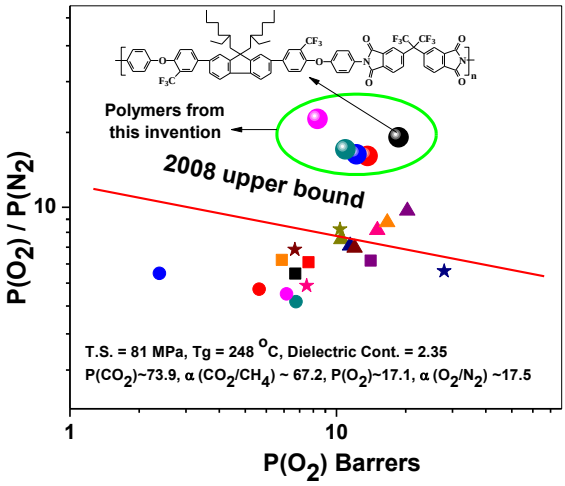
a) High –performance polymer membranes for gas separation application: Surpass the latest upper boundary limit drawn by L. M. Robeson.

Hundreds of polymers investigated so far as potential membrane materials; only a few found actual applications in industrial gas separating plants. It is a long way from a polymer that showed a right combination of permeability and selectivity to the industrial use of membranes based on it. The requirements for the production of robust gas separation membranes include sufficiently good mechanical and film-forming properties, thermal and chemical stability under the conditions of the separation process, and absence of aging in thin films (reduction of permeability in time). Wholly aromatic polyimides and polyamides are good candidates because of their number of outstanding properties. However, this class of polymers suffers from their limited solubility and intractability in their full imide form that renders processioning difficulties. Our research aims to prepare processable polyimides (PIs) and polyamides (Pas) without sacrificing their set of outstanding properties. They have the right balance between gas permeability and selectivity for a pair of gas. Accordingly, a large number of semi-fluorinated PIs and PAs have been prepared with cardo moieties in the polymer backbone to draw an optimized blueprint for polymer structure versus properties. The non-porus membranes prepared using these

polymers have been investigated for their gas separation performance. The polymers showed outstanding thermal stability (Td ~ 559 oC), high glass transition temperature (Tg ~ 335 oC), high tensile strength (~102 MPa), and both high gas permeability a gas selectivity for a pair of gases.The PIs prepared from 6FDA showed the highest permeability coefficient for all the gases (P_{CO2} = 71.32, P_{O2} = 25.37) whereas BPADA based polymer exhibited the highest permselectivity (CO_2 /CH_4 ~37.17 and O_2/N_2~8.36); staying closer/ surpassed to the latest upper boundary limit drawn by L. M. Robeson. [*J. Membr. Sci.* ***343*** *(2009) 97-103; J. Membr. Sci.* ***345*** *(2009) 249-256; J. Membr. Sci.* ***350*** *(2010) 53-61; J. Membr. Sci.* ***364*** *(2010) 211-218; J. Membr. Sci.* ***365*** *(2010) 329-340; J. Membr. Sci.* ***362*** *(2010) 58-67 ; Macromolecules* ***48*** *(2015) 4541-4554 ; Patent Appl. No. 782/KOL/2015; J. Membr. Sci.* ***365*** *(2016) 172-182 ; Polym. Chem.* ***8*** *(2017) 4220-4232; J. Membr. Sci.* ***522*** *(2017) 77-90; ACS Omega 3 (2018) 13510-13523; Sep. Purif. Tech.* ***217*** *(2019) 183-194*].



Macromlecules, 48 (2015) 4541-4554



J. Membr.Sci. 497 (2016) 172-182;
Indian Patent No. 352959 (Granted on: 03/12/2020)

b) New poly(ether amide)s for pervaporation application : Benzene selective membrane material, ever achieved highest pervaporation separation index (PSI)

Aromatic polyamides have received considerable attention because of their outstanding thermal stability, chemical resistance, and mechanical properties. However, their applications are restricted because of their poor solubility in organic solvents and too high glass transition temperatures that make them very difficult to be processed by spin coating or thermo-forming techniques. We have incorporated both fluorine and flexible ether linkages by designing new diamine monomers that resulted in poly(ether amide)s when reacted with several diacids. The tailored polymers showed excellent thermal stability associated with high glass-transition temperatures (230-290 oC), good mechanical strength, and preferential solubility in organic solvents. The dense membranes were fabricated and used for pervaporation separation of benzene/cyclohexane mixture. The study indicates that the membranes are Bz selective with separation factor as high as 7.1, the normalized flux as high as 27.31 kg μm/m2 h, and showed the highest pervaporation separation index (PSI) value (3782 g/m2 h). Besides these, in general, the low activation energy, as was calculated from the temperature dependence permeation study indicated the suitability of these polymers for pervaporation separation of Bz/Chx mixture in large scale operation. This study gives a direction that what structural modifications in polymer structure to improve both flux and separation factor, while not sacrificing the other physical properties. [*Sep. & Puri. Tech.* ***70*** *(2009) 128-135; J. Membr. Sci.* ***349*** *(2009) 145-155; J. Membr. Sci.* ***360*** *(2010) 380-388*]

c) New membrane materials for fuel cell application

Prof. Banerjee and his group have developed several classes of high-performance polymers and membranes thereof by designing new monomers and polymers. His work on the development of new proton exchange membrane material is highly remarkable. He has nicely demonstrated new PEMs with improved membrane performance in terms of oxidative/hydrolytic, thermal and mechanical stability, water uptake, and proton conductivity compared to commercial Naffion® PEM materials. [*J. Membr. Sci.* ***409/410*** *(2012) 145-155; J. Membr. Sci.* ***411/412*** *(2012) 117-129; J. Membr. Sci.* ***435*** *(2013) 145-154; Ind. & Eng. Chem. Res.* ***52*** *(2013) 2772-2783; J. Membr. Sci.* ***441*** *(2013) 168-177; J. Membr. Sci.* ***435*** *(2013) 145-154; RSC Advances* ***4*** *(2014) 11848–11858; RSC Adv.* ***4*** *(2014) 22398–22410; RSC Adv.* ***4*** *(2014) 46723–46736; Membr. Sci.* ***469*** *(2014) 225-237; Solid State Ionics* ***254*** *(2014) 82-91; Eur. Poly. J.* ***60*** *(2014) 235-246; Eur. Poly. J.* ***73*** *(2015) 466-479; RSC Adv.* ***6*** *(2015) 13478-13489; Mater. Chem. Phy.****181*** *(2016)265; RSC Adv.****6*** *(2016) 13478; J. Membr. Sci.* ***510*** *(2016) 497-509; Eur. Poly. J.* ***83*** *(2016) 114-128; New J. Chem.* ***41*** *(2017) 6849-6856; Eur. Polym. J.* ***95*** *(2017) 581-595; Eur. Polym. J.* ***103*** *(2018) 322-334; ACS Appl. Mat. Interfaces* ***10*** *(2018) 14803-14817; Inorg. Chem. Front.* ***3*** *(2019) 184-191; ACS Appl. Polym. Mater.* ***1*** *(2019) 893–905; Eur. Polym. J. 118 (2019) 451–464; Chem. Asian J.* ***14*** *(2019) 4389-4394; J. Polym. Sci.* ***58*** *(2020) 263-279; ACS Appl. Polym. Mater.* **6** (2024) 3456-3469; *Macromolecules* **57** (2024) 4584-4598].

d) Photoluminescent nanoparticles:

Photoluminescent nanoparticles especially, carbon dots, have been prepared from natural sources using green synthetic route. The materials were investigated for environmental and biological applications such as heavy-metal sensing, bio labeling, drug delivery, targeted cancer therapy, in vitro and in vivo experiments, and light-emitting polymer composites. [*J. Photochem. Photobiol. B.* ***197*** *(2019)111545; Mater. Chem. Phy.* ***237*** *(2019) 121860; Colloids and Surfaces A.* ***579*** *(2019) 123604; Int. J. Biol. Macromol.* ***132*** *(2019****)*** *316-329; New J. Chem****.*** ***43*** *(2019****)*** *6205-6219; Luminescence* ***33*** *(2018) 1136-1145; J. Photochem. Photobio. B: Bio****.*** ***180*** *(2018****)*** *56-67; Sensor. Actuat. B-Chem.* ***266*** *(2018****)*** *583-593; Mater. Sci. Eng. C* **88** (2018)115-129; *Nanotechnology* ***28*** *(2017****)*** *19550; ACS Appl. Bio Mater*. **5** (2022) 5693-5705].

e) Polymers for High RI application

High refractive indices (RI) polymers use in diverse applications, which include OLEDs, lenses, waveguides, prisms, etc. The lightweight, ease of solution processability, impact resistance, and dying ability made them superior compared to inorganic glasses. Prof. Banerjee group has contributed in developing new organo-soluble polymers with very high RI and demonstrated thir properties. [*ACS Omega* **9** (2024) 6253-6279; *ACS Omega*, 8 (2023) 43236-43242; *J. Polym. Sci.* **61** (2023) 1778-1791; *Macromolecules* **55** (2022) 9766-9779; *Macromolecules* **55** (2022)1015-1029].

B. Product / Technology Development

- Development of slow-release insecticidal paint.
- Quartz Crystal-based Piezoelectric sensor for detection of chemical warfare (CW) agents.
- Development of new materials for spherical carbon.
- In-house Kapton film development.

- Development of Siltem copolymer.
- Development of face mask for defence application.
- Development of high molecular weight PMMM for e-beam lithography.
- Developed new membrane materials for efficient gas separation and perveporation application.
- Development of CNT-epoxy nanoparticle based fractional capacitor [*Indian Patent No. 427741 (Granted on: 30/03/2023)*].
- Development new SILTEM copolymers for high temperature, radiation shield cable application [Several granted patents; [*EP2030207(B1), CN101506907(B), US8,491,997 (B2), US8168726 (B2) EP2029660(B1), CN101506271(B), US8071693(B2)*].
- Developed new proton exchange membranes for fuel cell applications.
- Development of low voltage electrowetting-on-dielectric (EWOD) actuation using nanocomposite thin film [Indian Patent No. 350764 *(Granted on: 03/11/2020)*].
- Developed PI-PDMS membrane (10-20 micorn) for IMS based chemical agent monitor for detection of CW agents.