SAKTHI DHARAN C P

Ph.D. in Polymer Science

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Dedicated myself to studying organic compounds for more than 10 years. Exceptional skill in designing and analyzing the composition and performance of polymer composites. My area of interest is the structure-property relationship of polymers as well as their product design, production, and technology. My recent research focuses on the molecular alignment and electrical properties of vat dyes. Experience and diligent academic researcher with industrial research in organic compounds and polymers.

Profile Summary

- Worked as a Senior Researcher at South Ural State University, Russia.
- Worked as a Visiting Scholar at Carlton University, Canada.
- Ph.D. in Polymer Chemistry at College of Engineering, Anna University, India.
- Published 18 research papers.
- Applied 1 patent.

Employment History

Senior Researcher

Mar 2020 – Dec 2020 | South Ural State University| Russia.

Senior Researcher

Oct 2017 – Mar 2020 | Nanotechnology Research and Education Center | South Ural State University| Russia.

Visiting Researcher

May 2014 – Sep 2017 | Department of Chemistry | Carleton University | Canada.

Canadian Commonwealth Researcher

Oct 2012 – March 2013 | Department of Chemistry | Carleton University | Canada.

Production Chemist

Apr 2009 – Sep 2009 | Fumed Silica Production Unit| Cabot Sanmar Pvt. Ltd | India.

Education

Ph.D. in Polymer Science

2010 – 2017 | Department of Chemistry | Anna University | India.

Dissertation title: *Studies on Schiff Base functionalized and Betti type Cyanate ester and its blends with Epoxy.*

Master of Science in Chemistry (M.Sc)

2006 – 2008 | Department of Chemistry | Kongunadu Arts and Science College | Bharathiar University | India.

Bachelor of Science in Chemistry (B.Sc)

2003 – 2006 | Department of Chemistry |Bishop Heber College | Bharathidasan University | India.

Research Experience

- Developed molecularly aligned structure of thermoset polymers for high end application.
- Xerogels -based nanocomposites prepared for high performance polymer applications.
- Familiarized in Sonogashira reaction, Suzuki coupling reaction, Vilsmeier reagent.
- Synthesized and characterization of high-performance polymer materials like dicyanate esters, hyper branched triazine networks.
- Synthesized and characterization of poly crystalline materials, acetylene derivatives as precursor for the preparation of covalent organic framework materials for semiconductor application.
- Studied the series of graphene and MWsCNT-based nanocomposites.
- Studied polymer blends, eg. Dicyanate esters/epoxy.
- Studied the structure-property relationships of a series of polymers and nanocomposites.
- Synthesis of a series of triazole-containing diamines.
- Developed the green synthesized titanium dioxide nanomaterials.
- Developed phase diagrams

Research Expertise

- Synthesis and preparation of polymer composites
- Product and formulation development
- Material characterization
- Data processing and image analysis

Research Interests

- Bio inspired materials
- Polymer composites
- Structure and molecular principles of natural system
- Organic Electronics

Experimental Characterization Technique

Spectroscopy FT-IR | UV-visible | X-ray diffraction | NMR

Microscopy Scanning and Transmission electron microscopy

Thermal and Mechanical Analysis Differential scanning calorimetry |Thermal-gravimetric analysis | Universal testing machine (UTM) | Dynamic mechanical analysis | Rheometer and Various Physico-chemical methods

Awards

- Seal of Excellence Award for the proposal entitled as 'Bio-based vitrimers materials for smart applications'-Marie Skłodowska-Curie actions call H2020-MSCA-IF-2020.
- Senior Research Fellow – "University Grant Commission Meritorious fellowship" (October 2014–August 2016), India.
- Visiting Researcher- "NSERC discovery Fellowship, Government of Canada" (May 2014–September 2014), Canada.
- Senior Research Fellow – "University Grant Commission Meritorious fellowship" (April 2013–April 2014), India.
- Visiting Researcher- "Canadian Commonwealth Fellowship" (October 2012–March 2013), Canada.
- Junior Research Fellow – ''University Grant Commission Meritorious fellowship'' (April 2011–September 2012), India.

Skills

- Project management
- Writing and communication
- Product development
- Cost effective

Roles and responsibility

- Translating market-led and proactive ideas to niche products.
- Developing a new composites' or improving existing product both in terms of efficacy & additional benefits.
- Carrying out evaluation and consumer research of work-in-progress & finished products.
- Supporting production scale-up & troubleshooting by conducting plant trials and finalizing product, process requirements & specifications.
- Ensuring all regulatory conditions is met for products developed for the respective country.
- Understanding competitor products and technologies.
- Screening and selecting efficient raw materials by reviewing scientific literature & trade information.
- Cost optimization of existing formulation without compromising on product quality & efficacy.
- Recommending the ideal supplier and alternate supplier for raw materials used.
- Representing the R&D team as a member of the CFT-Cross F functional Team (Interface between marketing, Operations, legal & sales).

Expertise

- Cosmetic Emulsion
- Rheological Additives
- Surfactant Based System for Personal Care Products

Reviewer in International Journal

High-Performance Polymers, Advances in Polymer Technology, Polymer Bulletin, Royal Society of Chemistry, Journal of Applied Polymer Science.

References

Prof. Sarojadevi Muthusamy,
Professor,
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Anna University, Chennai, India.
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Prof. D.A. Zherebtsov,
Senior Researcher,
South Ural State University,
Chelyabinsk, Russia 454080.
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Dr. Elango Hrishikesan,
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INFO

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Publications list

1. Sergey A. Nayfert, Chettichipalayam P. Sakthidharan, Pavel V. Dorovatovsky, Andrey N. Efremov, Artyom A. Osipov, Kanthapazham Rajakumar, Dmitry A. Zherebtsov, Structure of four vat dyes and of violanthrene, Dyes and Pigments, 2023, 111839, https://doi.org/10.1016/j.dyepig. 2023.111839.
2. D. A. Zherebtsov, V. V. Sharutin, S. A. Nayfert, M. A. Polozov, Ch. P. Sakthi Dharan, K. Rajakumar, Structure and Optical Properties of ((2,9-Dibromodibenzo[c,pqr] tetraphene-7,14-diyl)bis(ethyne-2,1-diyl))bis(triisopropylsilane), Crystallography Reports, Vol. 67 (2022), 371–375.
3. D. A. Zherebtsov, N. V. Somov, S. A. Nayfert, M. A. Polozov, Ch. P. Sakthi Dharan, K. Rajakumar, Structure and Properties of 9,10-bis(Triisopropylsilyletinyl)anthracene. Crystallography Reports, Vol. 67 (2022), 376–382.
4. Sakthidharan, C. P, Niewa, Rainer, Zherebtsov, Dmitry A, Podgornov, Fedor V, Matveychuk, Yury V, Bartashevich, Ekaterina V,Nayfert, Sergei A, Adonin, Sergei A, Gavrilyak, Maksim V, Boronin, Viktor A., Polozov, Maksim A, Karthikeyan, Subramani, Sarojadevi, Muthusamy, Rajakumar, Kanthapazham, Prabunathan, Pichaimani, Crystal structure and electric properties of 4,4'-dimethyl-6,6'-dichlorothioindigo (Pigment Red 181), Acta Cryst. B77 (2021), B77, 23-30.
5. D.A. Zherebtsov, D.A. Pankratov, S.V. Dvoryak, D.E. Zhivulin, V.E. Eremyashev, R.F. Yantsen, V.E. Zhivulin, K.R. Smolyakova, S.M. Lebedeva, V.V. Avdin, V.V. Viktorov, C.P. SakthiDharan, K. Rajakumar, L.V. Radionova. Key role of nitrogen in conductivity of carbon-nitrogen materials, Diamond Related Materials (2021), 108183.
6. C. P. Sakthidharan, M.A. Polozov, V.V. Polozova, S.A. Naifert, D.A. Zherebtsov, S.V. Merzlov, V.V. Avdin. Thermal decomposition mechanism of the Li, Na and Cd-maleates, Russian Journal of Physical Chemistry A(2020),Vol. 94, 1311–1318.
7. D. A. Zherebtsov, E. A. Trofimov, C. P. Sakthi Dharan, Y. Kalmagambet, D.A. Vinnik, S.A. Nayfert, M. A. Polozov, S. V. Merzlov, V. V. Avdin, M. G. Vakhitov, O. V. Zaitseva, D. S. Klygach, I. V. Makrovets. Phase diagram of pyrene–2,3-7,8-dibenzpyrene-1,6-quinone, Journal of Thermal Analysis and Calorimetry (2020), Vol. 139, 1925-1929.
8. D. Manojlović, K. Lelek, G. Roglić, D. Zherebtsov, V. Avdin, K. Buskina, C. Sakthidharan, S. Sapozhnikov, M. Samodurova, R. Zakirov, D. M. Stanković, Efficiency of homely synthesized magnetite: carbon composite anode toward decolorization of reactive textile dyes, International Journal of Environmental Science and Technology (2020), Vol. 17, 2455-2462.
9. D. A. Zherebtsov, M. U. Schmidt, R. Niewa, C. P. Sakthidharan, F. V. Podgornov, Y. V. Matveichuk, S. A. Nayfert, M. A. Polozov, S. N. Ivashevskaya, A. I. Stash, Yu-Sheng Chen, D. E. Zhivulin, V. E. Zhivulin, S. V. Merzlov, E. V. Bartashevich, V. V. Avdin, Hua Shu Hsu, Feng Wei Guo. “Two new polymorphs of cis-perinone: crystal structures, physical and electric properties,”Acta Crystallographica B, Vol. 75, (2019), No. 3,384-392.
10. M.A. Polozov, S.A. Neifert, V.V. Polozova, D.A. Zherebtsov, C. P. Sakthidharan, S.V. Merzlov, V.V. Avdin. “Features of Thermolyze of the maleates of Cu and La,” SUSU Bulletin (Chemistry), Vol. 11 (2019), No. 2, 39-48.
11. C. P. Sakthi Dharan, P. R. Sundararajan, M. Sarojadevi.: ‘Thermal andmechanical properties of the epoxy blends with dicyanate ester containing quinoline moiety,’ The New Journal of ChemistryVol. 42, (2018), 11202-12.
12. Denis S Klygach, Maksim Vakhitov, Denis Vinnik,Alexander Bezborodov, Svetlana Gudkova,Vladimir Zhivulin,Dmitry Zherebtsov,C. P. SakthiDharan; Sergei V Trukhanov, Alexey V Trukhanov,‘Measurement of

permittivity and permeability of barium hexaferrite', Journal of Magnetism and Magnetic Materials,Vol. 465, (2018) 290-294.

13. D. A Zherebtsov, S. A. Nayfert, M. A. Polozov, D. E. Zhivulin, V. E. Zhivulin, A. I. Stash, Yu-Sheng Chen, S. V Merzlov, E. V. Bartashevich, V. V. Avdin, Hua Shu Hsu, Feng Wei Guo, C. P. SakthiDharan, 'The Structure and Properties of 2, 3-7, 8-Dibenzpyrene-1, 6-Quinone,' Crystallography Reports, Vol. 7, (2018) No. 7, pp. 1110-1115.
14. C. P. Sakthidharan, P. R. Sundararajan and M. Sarojadevi, 'Odd-Even Effect on the Thermal Properties of Schiff base functionalized dicyanate esters and thermo-mechanical properties of their blends with epoxy resins.' RSC Adv., Vol. 5, (2015), 73363-73372.
15. Rakesh Samikannu, Chettichipalayam P Sakthi Dharan, Muthusamy Sarojadevi and Pudupadi R Sundararajan, 'Monomer Self Assembly and Organo-Gelation as a Route to Fabricate Cyanate Ester Resins and their Nanocomposites with Carbon Nanotubes.' European Polymer Journal, Vol.68, (2015), 161-174.
16. C. P. Sakthidharan, P. R. Sundararajan and M. Sarojadevi, 'Thermal and Mechanical Properties of Azomethine Functionalized Cyanate Ester/Epoxy Blends.' RSC Advance, Vol. 5, (2015), 19666-19674.
17. S. Rakesh, C. P. Sakthi Dharan, M. Selladurai, V. Sudha, P. R.Sundararajan and M. Sarojadevi, 'Thermal and mechanical properties of POSS-Cyanate ester/epoxy nanocomposites', High Performance Polymers, Vol. 25, No. 1, (2013), 87-96.
18. C. P. Sakthi Dharan and N. Sampathkumar, 'An efficient synthesis of 1,2-oxazino[4,5-b]quinolin-1-one', HL, Vol. 1, No. 1, (2011), 43-46.

Conference Proceeding

1. MA Polozov, VA Polozova, CP Sakthidharan, DA Zherebtsov, SA Nayfert, crystal structure, thermal stability and conductivity of (2e)-6-chloro-2-(6-chloro-4-methyl-3-oxo-1-benzothiophen-2-ylidene)-4-methyl-1-benzothiophen-3-one, Mendeleev 2019, 114-114.
2. MA Polozov, VV Polozova, DA Zherebtsov, CP Sakthidharan, R Kanthapazham, SA Nayfert, VV Avdin, two new polymorphs of cis-perinone: crystal structures, physical and electric properties, Chemistry of Organoelement Compounds and Polymers 2019, 222-222.

Patents

M.A. Polozov, S.A. Naifert, D.A. Zherebtsov, C. P. Sakthidharan, Patent filed (Ref. No: МПК: C25B 11/12, B82B 1/00) and entitled as "The method of obtaining porous composite electrodes".

Book Chapters

Chapter title: Microstructural Analysis of Polymer Blends, Composites and Nanocomposites, M. Fathima Rigana, T. Simi Annie, P. Thirukumaran, A. Shakila Parveen, R. Balasubramanian, S. Balaji, C. P. Sakthi Dharan and M. Sarojadevi.