

## **Prof. (Dr) Prashant S. Kulkarni**

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### **Objective**

To investigate in the interdisciplinary area of Chemistry & Chemical Engineering for solving critical problems related to the Energy & Environment.

### **Summary of Research Output**

- ❖ Chemical Technologies Developed: 6, Patents: 8 (6 Granted)
- ❖ Total No. of Peer-review International Publications: 62, *h*-index: 28, Total No. of Citations: 3000
- ❖ Papers having more than 5 Impact Factor: 25, Critical Reviews: 4, Book – Chapters: 4;
- ❖ Conferences at Abroad: 6, DAE Govt. of India Classified Report: 1, Ph.D. Students Guided: 7.

### **Awards & Accomplishments**

- ⚙ More than 20 years (post-PhD) **of interdisciplinary research experience** (incl. 6 years at abroad, EU) mainly in the area of Industrial Chemistry and Engineering.
- ⚙ Principal Investigator of ERIPR/DRDO Sponsored “**Safe Hydrogen Project**” (**Funding: 7.4 Crores**) (2021).
- ⚙ Top 2% Scientist in **World: Ranked by Stanford University**, USA (from 2020).
- ⚙ **DRDO - National Science Day Award** for contribution in hypergolic, bipropellant research (2019).
- ⚙ (Re)Invited by Elsevier for writing a Chapter in **Encyclopedia of Environmental Health - 2<sup>nd</sup> Ed.** (2018).
- ⚙ Worked on a prestigious project of DIAT-DRDO, **ERIPR Nano-project (Funding: 42 Crores)** (2017).
- ⚙ **Outstanding Reviewer** award from Elsevier publishers (2014).
- ⚙ Invited by Wiley for writing a Chapter in **Handbook of Combustion** (2014).
- ⚙ Given a talk in **Confederation of Indian Industry (CII)** – Green Technology workshop, Mumbai (2013).
- ⚙ Invited by Elsevier for writing a Chapter in **Encyclopedia of Environmental Health** (2010).
- ⚙ **Referee** for various international journals of repute having high impact factor.
- ⚙ Awarded scientist-ship by **Fundação para a Ciência e Tecnologia (FCT)**, Gov. of Portugal (2004 & 2007).
- ⚙ **Wrote critical review papers** in the field of Green Chemistry and Environmental Science.
- ⚙ Achieved **single author publication** in the field of membrane process (Chem. Eng. J. 2003).
- ⚙ Awarded post-doctoral fellowship by **ENEA-RES**, Funzione Centrale Relazioni Esterne, Gov. of Italy (2003).
- ⚙ Recipient of prestigious, **Krishnan Fellow award** from Dept. of Atomic Energy (DAE), Gov. of India (2001).
- ⚙ Ph.D. from the premium Institute of India, Chemical Engineering Department, **UDCT, Mumbai**.

- ⚙ **Best student** of the UDCT hostel, awarded in February 1999.
- ⚙ Qualified in **GATE, SET and CSIR** examinations.

## Professional Experience

Sr. No.	Employer	Position held	Date of Joining	Date of Leaving
1.	Defence Institute of Advanced Technology (Deemed University), Pune	Professor	01-06-2010	Till Date
2.	Institute of Superior Technology (IST) and Centre for Green Chemical Processes, Lisbon, Portugal	Sr. Researcher / Scientist	01-10-2004	31-05-10
3.	Italian National Agency for New Technologies, Energy & Sustainable Development (ENEA), Rome, Italy	Post-doctorate	07-07-2003	31-06-04
4.	Bhabha Atomic Research Centre, DAE, Mumbai	Krishnan Fellow	15-04-2001	31-06-03
5.	Institute of Chemical Technology, (ICT/UDCT), Mumbai	JRF & SRF	01-01-1997	31-01-01
6.	Shivaji University, Post Graduate Centre, Solapur	Lecturer	04-06-1996	31-12-96

## Educational Qualifications

- **Doctor of Philosophy in Chemistry (Chemical Eng. Branch); Ph.D.** **1997 – 2001**  
 Institute of Chemical Technology (formerly UDCT), University of Mumbai, Mumbai, India  
 Dissertation : Studies in Heterogeneous Systems (Liquid Membrane Process)  
 Advisor : Professor (Dr.) V.V. Mahajani, Chemical Engineering Division, ICT, Mumbai, India.
- **Master of Science in Organic Chemistry; M.Sc.** **1993 – 1995**  
 (Specialized in Organic Chemistry)  
 Shivaji University Kolhapur, Kolhapur, India.  
 Passed in First Class with Distinction (71.20 % Marks).

## Research Interests

Safe Hydrogen Storage & Applications, Ionic Liquids, Advanced Reduction/Oxidation Processes, High Energy Materials, Membrane Based Processes, Molecularly Imprinted Polymers, Heavy Metal Removal.

## Domain Knowledge

Organic Chemistry, Green & Sustainable Chemistry, Environmental Science & Technology, Industrial Chemistry, Separation Processes, Nuclear Chemistry.

## Subjects Taught

Hydrogen Energy; Organic Chemistry; Chemical Process Design; Membrane Science & Technology; Chemistry

and Technology of High Energy Materials; Propellants & Pyrotechnics; Explosives Safety and Hazardous Waste Management; Nuclear, Biological and Chemical Warfare.

## Chemical Processes Developed

- Oxidative desulphurization of diesel fuel using ionic liquid (2020)
- Dehydration of hydrazine hydrate (a rocket fuel) by pervaporation process (2018)
- Ionic liquid based hypergolic fuels for rocket propulsion (2016).
- Suppression of hydrogen flames by using chemical inhibitors (2015).
- Separation of tungsten (W) from PCB recycling unit effluents (2013).
- Recovery of d-limonene (a biofuel) from orange peels by using organophilic pervaporation process (2009).
- Separation of dioxins from incineration chamber by using supported liquid membranes (2007).
- Recovery of uranium from leach liquor of Jadugoda ore by using emulsion liquid membrane process (2003).

## Research Collaborations

- Hazard management and process safety while using hydrogen gas, CEFEEES (DRDO), New Delhi.
- Suppression of hydrogen flammability for aerostatic applications, ADRDE (DRDO), Agra.
- Development of ionic liquid based hypergolic fuels, DRDL (DRDO), Hyderabad.
- Advanced energetic propellant for high performance propulsion systems, HEMRL (DRDO), Pune.
- Separation of biofuels using membrane technology, DIBER (DRDO), Haldwani.
- Molecularly imprinted polymer-based sensors, NMRL (DRDO), Ambarnath.
- Development of hydrogen by using photocatalytic process, NCL (CSIR), Pune.

## Research Projects Investigated

Sr. No.	Project Title	Funding Agency	Role	Period
1.	Development of Technology for Production of Non-flammable Hydrogen Gas and its Application in Lighter than Air (LTA) Vehicle	ER&IPR, DRDO, Delhi	Principal investigator	3 Years 2021-24
2.	Development of non-flammable hydrogen using selected inhibitors & study of its lifting ability (Phase-1.5)	ARDB, DRDO, Delhi	Principal investigator	2 Years 2018-20
3.	Feasibility Studies for Development of Non-flammable Hydrogen (Phase 1)	ARDB, DRDO, Delhi	Principal investigator	1.6 Year 2016-2017
4.	Large Scale, High Quality Nanomaterial Synthesis for Defence Applications: Coatings, Devices and Healthcare (Development of Hypergolic Ionic	ER&IPR, DRDO, Delhi	Principal Co-investigator	5 Years 2012-17

Liquids)

5.	Supported Ionic Liquid Membranes (SILMs) for the Removal of Dioxins, CO <sub>2</sub> , and SO <sub>2</sub> .	European Union	Co-Investigator	3 Years 2007-10
6.	Green Chemical Processing using Pervaporation and Benign Solvents	FCT, Portugal	Investigator	2 Years 2007–09
7.	Absorption of Organic Solutes by using Ionic Liquids	European Union	Co-Investigator	2 Years 2005–07
8.	Extraction of Titanium from MSW fly ash	ENEA, Italy	Principal Investigator	1 Year 2003–04
9.	Recovery of Uranium from Leach Liquor of Jadugoda Ore and Nuclear Acidic Waste	DAE, India	Principal Investigator	2 Year 2001–03

### Guidance to Post-doctoral Fellows

No.	Name	Title of the Project	Status
1.	Dr Bapurao G. Bharate	Ionic liquid capped MnO <sub>2</sub> nanoparticles as electrode material & IL as electrolyte for supercapacitor application.	Post-doc Completed
2.	Dr Shruti A. Karnik	Ignition study of amine borane and cyanoborane based green hypergolic fuels.	Post-doc Completed
3.	Dr Sandesh S. Raut	Green hydrogen generation by photocatalytic water-splitting process	In Progress

### Guidance to Ph.D. Students

No.	Name	Title of the Thesis	Status
1.	Mr Vikas Bhosale (CSIR, Research Fellow)	Studies in Ionic Liquids based Hypergolic Fuels	PhD Completed
2.	Mr Manish Dinkar (DIAT, Research Fellow)	Development of Silica-based Materials for the Separation of Heavy Metal Ions from Aqueous Streams	PhD Completed
3.	Mr Pankaj Hande (CSIR, Research Fellow)	Development of Molecularly Imprinted Polymers for Sensing and Removal of Toxic Solutes	PhD Completed
4.	Mrs Anu Abirami S. (Scientist, HEMRL)	Development of an Eco-friendly Method to Convert Life Expired Fuel Rich Propellants	PhD Completed
5.	Mr Ramesh Kurva (Scientist HEMRL)	Biculative System for Composite Propellant Formulations	Ph.D. Completed
6.	Ms. S. Swati (DIAT, Research Fellow)	Synthesis and applications of phase change materials	PhD Completed
7.	Mr. Sandesh Raut (Project, Research Fellow)	Advanced Oxidation/Reduction Processes for the Treatment of Organochlorines	PhD Completed
8.	Mr. Mada SSNM Santosh	Reduced smoke advanced energetic propellant for high	In progress

	(Scientist, HEMRL)	performance propulsion systems	
9.	Mr. Surya Narain Lal (Scientist, NMRL)	Design & development of porous adsorbent for CO <sub>2</sub> capture	In progress
10.	Mr. Shubham Das (DIAT, Research Fellow)	Catalytic inhibition of hydrogen flame for safe handling and transport	In progress
11.	Mr. Prathamesh Ranjane (DIAT, Research Fellow)	Development of Phase Change Materials and their applications	In progress

- M.Tech. Students Guided: 18

## Patents

- 1) P.S. Kulkarni, U.T. Velan, Prathamesh Ranjane Non-Flammable Lifting Gas Composition for Lighter-Than-Air Vehicle and a Method for Optimizing the Same, Patent Filed.
- 2) P.S. Kulkarni, U.T. Velan, Prathamesh Ranjane Thermal Energy Storage Systems employing Life Expired Propellant, Patent Filed.
- 3) Prashant S Kulkarni, Madhura Deshpande, Swati Sundararajan, A Phase Change Material and a Process for preparing the Same, Patent Application No. 202011014026, Patent Granted (No. 455418).
- 4) Prashant S Kulkarni, Shruti Soman, Vikas B. Bhosale, A Process for Preparing Hypergolic Zwitterions from UDMH and Allyl Imidazole, Patent Application No. 201811023218, Patent Granted (No. 375148).
- 5) Prashant S Kulkarni, Vivekanand V. Swami, Method and Apparatus for Production of Non-flammable Hydrogen Gas, Patent No. MUM/201711034367, Patent Granted (No. 354510).
- 6) Amit Kumar, Asit B. Samui, Prashant S. Kulkarni, Process for grafting of phase change material on cellulose fiber and use thereof, Patent No. 1651/MUM/2014, Patent Granted (No. 345424).
- 7) Prashant S Kulkarni, Vikas B. Bhosale, Extraction and recovery of energetic materials using ionic liquids, Patent No. 2731/MUM/2013, Patent Granted (No. 337928).
- 8) Prashant S. Kulkarni, Luís C. Branco, João G. Crespo & Carlos A. M. Afonso (2007). Removal of dioxins and their analogs from gas flows comprises trapping via synthetic membranes and high stability ionic liquids. Patent Granted (No. PT103717).

## International Research Publications

- 1) S.K. Das, V.V. Swami, G.N. Joshi, P.S. Kulkarni, Effect of chemical vapours on suppression of hydrogen air explosions, manuscript submitted.
- 2) P. Ranjane, M. Deshpande, P.S. Kulkarni, Various polymorphs of calcium carbonate and poly(ethylene) glycol as thermal energy storage materials, *Journal of Applied Polymer Science* (2023) e54533.
- 3) M.K. Dinker, S.S. Raut, P.S. Kulkarni, Application of ionic mesoporous silica in selective recovery of tungstate ions through column adsorption and subsequent photocatalytic degradation of pollutant, *Environmental Science: Nano* 10 (2023) 1883.

- 4) P.S. Kulkarni, P. Ranjane, K. Mishra, S. Sundararajan, S. Kamble, Tetraalkylammonium-based dicationic ionic liquids (ILs) for CO<sub>2</sub> capture, **New Journal of Chemistry** 47 (2023) 12944.
- 5) R.R. Shetty, R.S. Raut, P.S. Kulkarni, S.P. Kamble, Hydrodechlorination of 4-Chloro-2-Aminophenol into a Recyclable Product Using Ni- and Cu-Based Catalysts, **Industrial and Engineering Chemistry Research** 61 (39) (2022) 14433.
- 6) S.K. Das, M.K. Dinker, P.S. Kulkarni, PEG-linked bis-imidazolium and polyhedral oligomeric based silsesquioxanes as ion exchangers, **Microporous and Mesoporous Materials** 343 (2022) 112185.
- 7) M.S.S.N.M. Santosh, V.S. Sadavarte, A. Kumar, S.M. Pande, P.S. Kulkarni, Examining the Effect of Trimethylol Propane Crosslinker on Butanetriol Trinitrate Plasticized Polycaprolactone Polymer Networks of Propellant Binder System, **Propellants, Explosives, Pyrotechnics** 47(6) (2022) e202100377.
- 8) K. Yadav, S. S. Raut, T. U. Patro, A. C. Abhyankar, P. S. Kulkarni, Annealing Temperature- and Morphology- Controlled Development of Nickel Cobaltite Nanoneedles for Photocatalytic Degradation of Nitroaromatics, **Industrial & Engineering Chemistry Research**, 61 (2022) 4273.
- 9) P.S. Kulkarni, V.A.E. Shaikh, M. Sutradhar, Enhanced separation of nitrophenols from wastewater by using ammonium ionic liquid with thiocyanate anion in supported liquid membrane, **Separation Science and Technology** 57(10) (2022) 1595.
- 10) S.S. Raut, P.S. Kulkarni, Photodegradation of an ammonium ionic liquid: spiking in urban wastewater and comparison with aromatic ionic liquids, **Environmental Science: Water Research & Technology** 7 (2021) 1723.
- 11) M. Deshpande, S. Sundararajan, A.B. Samui, P.S. Kulkarni, Microwave Assisted Preparation of Poly(ethylene) glycol/Lignin Blends for Thermal Energy Storage, **Journal of Energy Storage** 35 (2021) 102338.
- 12) S.S. Raut, S.P. Kamble, P.S. Kulkarni, Improved photocatalytic efficiency of TiO<sub>2</sub> by doping with tungsten and synthesizing in ionic liquid: precise kinetics-mechanism and effect of oxidizing agents, **Environmental Science and Pollution Research** 28(14) (2021) 17532.
- 13) S.S. Raut, R. Shetty, N.M. Raju, S.P. Kamble, P.S. Kulkarni, Screening of zero valent mono/bimetallic catalysts and recommendation of Raney Ni (without reducing agent) for dechlorination of 4-chlorophenol, **Chemosphere**, 250 (2020) 126298.
- 14) V.K. Bhosale S.A. Karnik, P.S. Kulkarni, Ignition study of amine borane and cyanoborane based green hypergolic fuels, **Combustion and Fuels**, 210 (2019) 1.
- 15) V.K. Bhosale, H.K. Chana, S.P. Kamble, P.S. Kulkarni, Separation of nitroaromatics from wastewater by using supported ionic liquid membranes, **Journal of Water Process Engineering**, 32 (2019) 100925.
- 16) S. Anu Abirami, K. Dhabbe, P.S. Kulkarni, Mehilal, Studies on conversion of waste nitramine and fuel rich based propellants into liquid fertilizer and their performance on crop, **Environmental Technology**, 40 (8) (2019), 1035.
- 17) S. Swati, A.B. Samui, P.S. Kulkarni, Crosslinked polymer networks of poly(ethylene glycol) (PEG) and hydroxyl terminated poly(dimethyl siloxane) (HTPDMS) as polymeric phase change material for thermal

- energy storage, **Solar Energy**, 181 (2019) 187.
- 18) S.S. Raut, Santhosh Kumar A., A. Jambhale, A.C. Abhyankar, P.S. Kulkarni, Enhanced photocatalytic activity of magnetically separable barium hexaferrite nano-platelets, **Industrial and Engineering Chemistry Research**, 57 (48) (2018) 16192.
  - 19) S. Swati, A.B. Samui, P.S. Kulkarni, Synthesis and characterization of poly(ethylene glycol) acrylate (PEGA) copolymers for application as polymeric phase change materials (PCM), **Reactive and Functional Polymers**, 130 (2018) 43.
  - 20) B.G. Bharate, P.E. Hande, A.B. Samui, P.S. Kulkarni, Ionic liquid (IL) capped MnO<sub>2</sub> nanoparticles as an electrode material and IL as electrolyte for supercapacitor application, **Renewable Energy**, 126 (2018) 437.
  - 21) S. Swati, A. Kumar, B.C. Chakraborty, A.B. Samui, P.S. Kulkarni, Poly(ethylene glycol) (PEG) modified epoxy phase change polymer with dual properties of thermal storage and vibration damping, **Sustainable Energy & Fuels**, 2 (2018) 688.
  - 22) S.P. Kodollikar Kulkarni, D.S. Bhatkhande, V. Pangarkar, P. Kulkarni, "Extraction of toluene and n-heptane mixture using ionic liquid Aliquat 336 and mathematical modeling for solvent selection", **Separation Science & Technology**, 53 (1) (2018) 61.
  - 23) S. Swati, A.B. Samui, P.S. Kulkarni, Thermal energy storage using poly(ethylene glycol) (PEG) incorporated hyperbranched polyurethane as solid-solid phase change material (PCM), **Industrial & Engineering Chemistry Research**, 56 (49) (2017) 14401.
  - 24) R. Shetty, V.B. Chavan, P.S. Kulkarni, B.D. Kulkarni, S.P. Kamble, Photocatalytic Degradation of Pharmaceuticals Pollutants Using N-Doped TiO<sub>2</sub> Photocatalyst: Identification of CFX Degradation Intermediates, **Indian Chemical Engineer**, 59(3) (2017) 177.
  - 25) M.K. Dinker, T.G. Ajithkumar, P.S. Kulkarni, L-Proline Functionalized Dicationic Framework of Bifunctional Mesoporous Organosilica for the Simultaneous Removal of Lead and Nitrate Ions, **ACS Sustainable Chemistry & Engineering**, 5(5) (2017) 4188.
  - 26) S. Swati, A.B. Samui, P.S. Kulkarni, Synthesis and characterization of poly(ethylene glycol) (PEG) based hyperbranched polyurethanes as thermal energy storage materials, **Thermo Chimica Acta**, 650 (2017) 114.
  - 27) P.E. Hande, S. Kamble, A.B. Samui, P.S. Kulkarni, An efficient method for determination of the Diphenyl Amine (stabilizer) in Propellants by using Molecularly Imprinted Polymer based Carbon Paste Electrochemical Sensor, **Propellants, Explosives, Pyrotechnics**, 42 (2017) 376.
  - 28) V.K. Bhosale, S.G. Kulkarni, P.S. Kulkarni, Theoretical performance evaluation of hypergolic ionic liquid fuels with storable oxidizers, **New Journal of Chemistry**, 41 (2017) 9889.
  - 29) S. Swati, A.B. Samui, P.S. Kulkarni, Versatility of polyethylene glycol (PEG) in designing solid-solid phase change materials (PCMs) for thermal management and their application to innovative technologies - Review, **Journal of Materials Chemistry - A**, 5 (2017) 18379.
  - 30) V.K. Bhosale, P.S. Kulkarni, Ultrafast Igniting, Hypergolic Ionic Liquids with Enhanced Hydrophobicity, **New**



*Journal of Chemistry*, 41 (2017) 1250.

- 31) P.E. Hande, S. Kamble, A.B. Samui, P.S. Kulkarni, Selective nanomolar detection of mercury using novel coumarin based fluorescent Hg(II)-ion imprinted polymer, ***Sensors and Actuators B: Chemical***, 246 (2017) 597.
- 32) S. Swati, A.B. Samui, P.S. Kulkarni, Shape-stabilized PEG-cellulose acetate blend preparation with superior PEG loading via microwave-assisted blending, ***Solar Energy***, 144 (2017) 32.
- 33) V.K. Bhosale, P.S. Kulkarni, Hypergolic behavior of Pyridinium Salts containing Cyanoborohydride and Dicyanamide Anions with Oxidizer RFNA, ***Propellants, Explosives, Pyrotechnics***, 41 (2016) 1013.
- 34) M.K. Dinker, N.V. Patil, P.S. Kulkarni, A diamino based resin modified silica composite for the selective recovery of tungsten from wastewater, ***Polymer International***, 65 (2016) 1387.
- 35) S.S. Raut, S.P. Kamble, P.S. Kulkarni, Efficacy of zero-valent copper (Cu<sup>0</sup>) nanoparticles and reducing agents for dechlorination of mono chloroaromatics, ***Chemosphere***, 159 (2016) 359.
- 36) M.K. Dinker, P.S. Kulkarni, Insight into the PEG-linked bis-imidazolium bridged framework of mesoporous organosilicas as ion exchangers, ***Microporous and Mesoporous Materials***, 230 (2016) 145.
- 37) S. Swati, A.B. Samui, P.S. Kulkarni, "Interpenetrating Phase Change Polymer Networks Based On Crosslinked Polyethylene Glycol And Poly(Hydroxyethyl Methacrylate)", ***Solar Energy Materials and Solar Cells***, 149 (2016) 266.
- 38) P.E. Hande, S.P. Kamble, A.B. Samui, P.S. Kulkarni, Chitosan-Based Lead Ion-Imprinted Interpenetrating Polymer Network by Simultaneous Polymerization for Selective Extraction of Lead(II), ***Industrial & Engineering Chemistry Research***, 55 (12) (2016) 3668.
- 39) V.K. Bhosale, S.G. Kulkarni, P.S. Kulkarni, Ionic Liquid and Biofuel Blend: A Low-cost and High Performance Hypergolic Fuel for Propulsion Applications, ***Chemistry Select***, 1 (2016) 1921.
- 40) Anu Abirami, S. R.R. Soman, N.T. Agawane, J. Bhujbal, R.V. Singh, P.S. Kulkarni, Mehilal, "Studies on curing of Glycidyl Azide Polymer (GAP) using isocyanate, acrylate and processing of GAP-Boron based fule rich propellants", ***International Journal of Energetic Materials and Chemical Propulsion (IJEMCP)***, 15(3) (2016) 215.
- 41) A.B. Lende, P.S. Kulkarni, "Selective recovery of tungsten from printed circuit board recycling unit wastewater by using emulsion liquid membrane process", ***Journal of Water Process Engineering***, 8 (2015) 75.
- 42) M.K. Dinker, P.S. Kulkarni, "Recent Advances in Silica-Based Materials for the Removal of Hexavalent Chromium: A Review", ***Journal of Chemical & Engineering Data***, 60(9) (2015) 2521.
- 43) P.E. Hande, A.B. Samui, P.S. Kulkarni, "A molecularly imprinted polymer with flash column chromatography for the selective and continuous extraction of diphenyl amine", ***RSC Advances***, 5 (2015) 73434.
- 44) P.E. Hande, A.B. Samui, P.S. Kulkarni, Highly selective monitoring of metals by using ion-imprinted polymers - a review, ***Environmental Science & Pollution Research***, 22 (2015) 7375.



- 45) M.K. Dinker, P.S. Kulkarni, "Temperature based adsorption studies of Cr(VI) using p-toluidine formaldehyde resin coated silica", **New Journal of Chemistry**, 39 (2015) 3687.
- 46) V.K. Bhosale, N.V. Patil, P.S. Kulkarni, Treatment of energetic material contaminated wastewater using ionic liquids, **RSC Advances**, 5 (2015) 20503.
- 47) A.B. Lende, M.K. Dinker, V.K. Bhosale, S.P. Kamble, P.D. Meshram, P.S. Kulkarni, "Emulsion ionic liquid membranes (EILMs) for removal of Pb(II) from aqueous solutions", **RSC Advances**, 4 (2014) 52316.
- 48) A. Kumar, P.S. Kulkarni, A. B. Samui, "Polyethylene glycol grafted cotton as phase change polymer", **Cellulose**, 21(1) (2014) 685.
- 49) P.S. Kulkarni, L.A. Neves, I.M. Coelho, C.A.M. Afonso, J.G. Crespo, "Supported liquid membranes for the removal of dioxins", **Environmental Science & Technology**, 46(1) (2012) 462.
- 50) P.S. Kulkarni, C. Brazinha, C.A.M. Afonso, J.G. Crespo, "Selective extraction of natural products with benign solvents and recovery by organophilic pervaporation: fractionation of D-limonene from orange peels", **Green Chemistry**, 12 (2010) 1990.
- 51) P.S. Kulkarni and C.A.M. Afonso, "Deep desulfurization of diesel fuel using ionic liquids: current status and future challenges – Critical Review", **Green Chemistry**, 12 (2010) 1139.
- 52) A.J. Ferreira, C. Cruz, M.H. Godinho, P.S. Kulkarni, C.A.M. Afonso, P.I.C. Teixeira, "Shear-induced lamellar ionic liquid crystal foam", **Liquid Crystals**, 37 (2010) 377.
- 53) R.F.M. Frade, A.A. Rosatella, C.S. Marques, L.C. Branco, P.S. Kulkarni, N.M.M. Mateus, C.A. Afonso, C.M.M. Duarte "Toxicological evaluation on human colon carcinoma cell line (CaCo-2) of ionic liquids based on imidazolium, guanidinium, ammonium, phosphonium, pyridinium & pyrrolidinium cations" **Green Chemistry**, 11 (2009) 1660.
- 54) P.S. Kulkarni, S. Mukhopadhyay, S.K. Ghosh, "The Liquid Membrane Process for the Selective Recovery of Uranium from Industrial Leach Solutions" **Industrial & Engineering Chemistry Research**, 48 (2009) 3118.
- 55) P.S. Kulkarni, L.C. Branco, J.G. Crespo, C.A.M. Afonso, "Capture of Dioxins by Ionic Liquids", **Environmental Science & Technology**, 42 (2008) 2570.
- 56) P.S. Kulkarni, J.G. Crespo, C.A.M. Afonso, "Dioxins Sources & Current Remediation Technologies – A Review", **Environment International**, 34 (2008) 139.
- 57) C. Cruz, M.H. Godinho, A.J. Ferreira, P.S. Kulkarni, C.A.M. Afonso, P.I.C. Teixeira, How foam-like is the shear-induced lamellar phase of an ionic liquid crystal? **Philosophical Magazine**, 88 (2008) 741.
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- 59) P.S. Kulkarni, V. Kalyani, V.V. Mahajani, "Removal of Hexavalent Chromium by Membrane Based Hybrid Processes", **Industrial & Engineering Chemistry Research**, 46 (2007) 8176.

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- 62) D. Fontana, P. Kulkarni, L. Pietrelli, "Extraction of Titanium (IV) From Acidic Media by 2-Ethylhexyl Phosphonic Acid Mono-2-Ethylhexyl Ester", **Hydrometallurgy**, 77 (2005) 219.
- 63) P.S. Kulkarni, "Recovery of Uranium (VI) from Acidic Wastes Using Tri-n-octylphosphine Oxide and Sodium Carbonate Based Liquid Membranes", **Chemical Engineering Journal**, 92 (2003) 209. (Single Author)
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- 2) Kulkarni PS (2019) Dioxins. In: Nriagu JO (ed.) **Encyclopedia of Environmental Health - 2<sup>nd</sup> Edition.**, Burlington (USA): ELSEVIER.
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### DAE - Classified Project

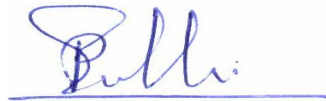
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## **Administration Duties Performed**

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- Member, Dept. Research Committee
- Assisted in conducting conferences, workshop and training courses.



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