

COVER LETTER

Dr. SANTHI RAJU PILLI

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Assistant Professor,

Department of Chemical Engineering and Technology,

Baish Community College, Jazan University, Jazan, Kingdom of Saudi Arabia,

Phone: +966-550388760.

E-mail: ssanthirajup@gmail.com, spilli@jazanu.edu.sa

Dear Professor/Sir/Madam,

I, **Dr. SANTHI RAJU PILLI**, presently working as an Assistant Professor in **Chemical Engineering at Jazan Univeristy, KSA** since April 2018, Previously I have worked as a **post-doctoral fellow at IIT Delhi, India**. The work was focused on **synthesis and characterization of amino acid based ionic liquids for CO₂ absorption using Liquid Foam Bed Reactor**. So far I have synthesized about 10 protic ionic liquids and worked on the same for CO₂ absorption experiments. I have worked as an Adhoc Faculty for two years at NIT Warangal and NIT Trichy, in India. I have earned my Ph.D (April, 2015) from IIT Guwahati (Chemical). The title of my Ph.D thesis is "*Extraction of Endocrine-Disrupting Compounds from Aqueous Solutions using Ionic Liquids: Theoretical Predictions and Experimentations using Supported Liquid Membrane*".

My research interests include synthesis of ionic liquids, CO₂ capture, Liquid Foam Bed Reactor, molecular modeling, COSMO-RS predictions, membrane based separations, wastewater treatment, adsorption and bosorption.

During my Ph.D work, I had effectively utilized my research skills and maintained the laboratory well. I have **published 11 scientific research articles** till date in reputed SCI journals and two articles are under review. I have also been participating and presented my research work in several national and international **conferences (10)** in India and abroad.

I have consolidated experience of five plus years, as a **post-doc at IIT Delhi**, teaching and in industry as a **Production-Engineer** (KOH plant) in Sree Rayalseema Alkalies & Allied Chemicals Ltd, Kurnool, India. I have also participated several **QIP programs/workshops/Summer schools** in India.

I am quite experienced in operating analytical instruments such as **GC-MS, HPLC, NMR, IR and UV-Vis etc**. Having brought all these points to your notice, I strongly believe that I can contribute to the research/teaching in any organization/research group while learning.

Thank you very much for your time and consideration.

Sincerely Yours,



SANTHI RAJU PILLI

CURRICULUM-VITAE

Dr. SANTHI RAJU PILLI

Assistant Professor,
Department of Chemical Engineering and Technology,
Baish Community College, Jazan University, Jazan, Kingdom of Saudi Arabia,
Phone: +966-550388760.

E-mail: ssanthirajup@gmail.com, spilli@jazanu.edu.sa



Academic Qualifications:

Degree	Discipline/ Specialization	College/University /Institute	Period
Ph.D	Chemical Engineering	IIT Guwahati	2010–2015
M.Tech	Chemical– Petroleum Refinery Engineering	IIT Guwahati	2008–2010
B.Tech	Chemical Engineering	JNTU Hyderabad	2002–2006

Research Experience so far:

- Foam-bed reactors, CO₂ capture using newly synthesized ionic liquids,
- Molecular modeling of ionic liquids, and COSMO–RS predictions
- Phase equilibria of ternary aqueous systems
- Liquid membranes and membrane based separations
- Removal of micro pollutants from wastewater
- Adsorption and biosorption

Professional Work/Research Experience:

- I. **Assistant Professor**, Dept. of Chem. Engg. Jazan University, Saudi Arabia (Since April 2018).
- II. **Post-doctoral Fellow**, Dept. of Chemical Engineering, IIT Delhi (Aug. 2016-April 2018).
- III. **Adhoc Faculty**, Dept. of Chemical Engineering, NIT Warangal, India, (July 2015 to May 2016).
- IV. **Temporary Faculty**, Dept. of Chem. Engg., NIT Trichy, India, (April 2014 to June 2015).
- V. **Research Scholar**, at Department of Chemical Engineering, IIT Guwahati, Assam, India under the supervision of Dr. Kaustubha Mohanty and Dr. Tamal Banerjee (July 2010 to March 2014).
Title of Ph.D thesis: “*Extraction of Endocrine-disrupting Chemicals from Aqueous Solutions using Ionic Liquids: Theoretical Predictions and Experimentations using Supported Liquid Membrane.*”
- VI. **Postgraduate Scholar** (July 2008 to May 2010) at Department of Chemical Engineering, IIT Guwahati, Assam, India.
M.Tech Thesis Title: “*Biosorption of Cr(VI) from aqueous solutions by Hydrilla verticillata weed: Batch and Column studies.*”
- VII. **Production Engineer** (June 2006 to July 2008) at Sree Rayalaseema Alkalies and Allied Chemical Ltd., Gondiparla, Kurnool, A.P., India.

Project proposals submitted IIT Delhi:

1. *Hydrogen Storage Using Colloidal Gas Aphrons (CGAs) and CGAs- Loaded with Metal Hydrides* (a research proposal was prepared collaborating with our group members Dr. Amit Singania and Mrs. Sony Chanda (research scholar) and Ms. Arunima Shukla (research scholar), and accepted, granted ₹1.5 million from the ONGC Energy Centre Trust, Mumbai).
2. Inter-Departmental & Multi-Institutional Applied Research on: *Innovative 'Poly-Green House' & 'Micro Cold-Storage-Unit' Operating Independent of Grid, for its Energy Requirements, Addressing Climate Change with Innovation*

Peer-Reviewed International Publications:

(Scopus ID: 39262382400, ORCID ID: 0000-0001-8841-6753, Google Scholar ID: F_R8X1oAAAAJ)

1. **S. R. Pilli**, T. Banerjee, K. Mohanty, Ionic Liquids as Green Solvents for the Treatment of Endocrine Disrupting Compounds Using Liquid Membranes: Review, *South Asian Journal of Experimental Biology*, **5** (2015) 258-270. [Impa. factor: 0.495; Citations: NA]
2. **S. R. Pilli**, T. Banerjee, K. Mohanty, HOMO-LUMO Energy Interactions between Endocrine Disrupting Chemicals and Ionic Liquids using the Density Functional Theory: Evaluation and Comparison, *Journal of Molecular Liquids*, **207** (2015) 112–124. [Impa. factor: 2.515; Citations: 06, ISBN / ISSN: 01677322, DOI: <http://dx.doi.org/10.1016/j.molliq.2015.03.019>]
3. **S. R. Pilli**, T. Banerjee, K. Mohanty, Liquid–liquid equilibrium (LLE) data for ternary mixtures of [C4DMIM][PF6]+[PCP]+[water] and [C4DMIM][PF6] +[PA]+[water] at T = 298.15 K and P = 1 atm, *Fluid Phase Equilibria*, **381** (2014) 12–19. [Impact factor: 2.2; Citations: 04, ISBN / ISSN: 03783812, DOI: <http://dx.doi.org/10.1016/j.fluid.2014.08.004>]
4. **S. R. Pilli**, T. Banerjee, K. Mohanty, 1-Butyl-2,3-dimethylimidazolium hexafluorophosphate as a Green Solvent for the Extraction of Endosulfan from Aqueous Solution Using Supported Liquid Membrane, *Chemical Engineering Journal*, **257** (2014) 56–65. [Impact factor: 4.321; Citations:3, ISBN / ISSN:13858947; DOI: <http://dx.doi.org/10.1016/j.cej.2014.07.019>]
5. **S. R. Pilli**, T. Banerjee, K. Mohanty, Performance of different ionic liquids to remove phenol from aqueous solutions using supported liquid membrane, *Desalination and Water Treatment*, **54** (2014) 3062–3072. [Impact factor: 1.173; Citations: NA, ISBN / ISSN: 19443994, DOI: <http://dx.doi.org/10.1080/19443994.2014.907750>]
6. **S. R. Pilli**, K. Mohanty, T. Banerjee, Extraction of Phthalic Acid from Aqueous Solution by Using Ionic Liquids: A Quantum Chemical Approach, *International Journal of Thermodynamics*, **17** (2014) 42–51. [Impact factor: 0.314; Citations: 01, ISBN / ISSN: DOI: 10.5541/ijot.482]
7. A. Panigrahi, **S. R. Pilli**, K. Mohanty, Selective Separation of Bisphenol from Aqueous Solution using Supported Ionic Liquid Membrane, *Separation and Purification Technology*, **107** (2013) 70–78. [Impact factor: 3.091; Citations: 18, ISBN / ISSN: 13835866; DOI: <http://dx.doi.org/10.1016/j.seppur.2013.01.020>]
8. **S. R. Pilli**, T. Banerjee, K. Mohanty, Ionic Liquids as Green Solvents for the Extraction of Endosulfan from Aqueous Solution: a Quantum Chemical Approach, *Chemical Product and Process Modeling*, **8** (2013) 1–14. [Impact factor: 0.487; Citations:03, ISBN / ISSN: 19342659; DOI: <https://doi.org/10.1515/cppm-2013-0001>]
9. **S. R. Pilli**, T. Banerjee, K. Mohanty, Extraction of Pentachlorophenol and Dichlorodiphenyl–trichloroethane from aqueous Solutions using Ionic Liquids, *Journal of Industrial and Engineering*

Chemistry, 18 (2012) 1983–1996. [Impact factor: 3.512; Citations: 09; ISBN / ISSN: 1226086X; DOI: <http://dx.doi.org/10.1016/j.jiec.2012.05.017>]

10. **S. R. Pilli**, V. V. Goud, K. Mohanty, Biosorption of Cr(Vi) on Immobilized *Hydrilla Verticillata* in a Continuous Up–flow Packed Bed: Prediction of Kinetic Parameters and Breakthrough Curves, *Desalination and Water Treatment*, 50 (2012) 115–124. [Impact factor: 1.173; Citations: 07; ISBN / ISSN: 19443994; DOI: <http://dx.doi.org/10.1080/19443994.2012.708555>]
11. **S. R. Pilli**, V. V. Goud, K. Mohanty, Biosorption of Cr(Vi) from aqueous Solutions onto Hydrilla Verticillata Weed: Equilibrium, Kinetics and Thermodynamic Studies, *Environmental Engineering and Management Journal*, 9 (2010) 1715–1726. [Impact factor: 1.258; Citations: 08, ISBN / ISSN: 15829596]
12. **S. R. Pilli**, T. Banerjee, K. Mohanty, Potential Removal of Pentachlorophenol from Wastewater using Novel Supported Ionic Liquid Membranes, *Journal of Water Process Engineering* (under review).

Publications obtained from Post-doc training @IIT Delhi:

1. **S. R. Pilli**, A.N. Bhaskarwar, A Review of Research Progress on Applications of Ionic Liquids in CO₂ Capture Technologies (to be submitted).
2. **S. R. Pilli**, A.N. Bhaskarwar, Synthesis and Characterization of Amino Acid Based Ionic Liquids as Green Solvents for CO₂ Absorption using a Liquid Foam Bed Reactor (to be submitted).
3. T. Dessie, **S. R. Pilli**, A.N. Bhaskarwar, Treatment and Characterization of Phosphorus from Synthetic Wastewater Using Aluminum Plate Electrodes in an Electrocoagulation Process (to be submitted).

International/National Conferences/Proceedings:

1. **S. R. Pilli**, T. Banerjee, K. Mohanty, Potential Removal of Pentachlorophenol from Wastewater using Novel Supported Ionic Liquid Membranes, paper was presented in *International Conference on Green Technologies for Environmental Pollution Control and Prevention*, National Institute of Technology, Tiruchirappalli, 27th–29th September 2014.
2. **S. R. Pilli**, T. Banerjee, K. Mohanty, Theoretical Screening of Different Ionic Liquids for the Separation of Bisphenol A from Aqueous Solution: A COSMO–RS Approach, in *Recent Trends in Water Science and Technology*, G. H. Patel College of Engg. and Tech., Gujarat, Feb 7th–8th, 2014, 166-175 (Proceedings paper).
3. **S. R. Pilli**, T. Banerjee, K. Mohanty, Preparation and Characterization of PVDF based Supported Ionic Liquid Membranes for the Removal of Organic Pollutants, poster was presented in *the first Symposium on Advances in Sustainable Polymers (ASP)*, organized by IIT Guwahati, Assam on Jan 10–11, 2014.
4. **S. R. Pilli**, T. Banerjee, K. Mohanty, Performance of Ionic Liquids to remove Phenol from Aqueous Phase using Supported Ionic Liquid Membranes, poster was presented in *Indrapastha International Conference on Biotechnology*, organized by Guru Gobind Singh Indraprastha University, New Delhi, October 22–25, 2013.
5. **S. R. Pilli**, T. Banerjee, K. Mohanty, Supported Ionic Liquid Membranes for the Separation of Endosulfan from Aqueous Phase: Experimental and COSMO–RS Study, paper was presented in *9th World Congress of Chemical Engineering (WCCE9)* at Seoul, South Korea, August 18th–23rd, 2013.
6. **S. R. Pilli**, T. Banerjee, K. Mohanty, Separation of Phenol from Aqueous Phase Using Supported Ionic Liquid Membrane, poster was presented in *9th World Congress of Chemical Engineering (WCCE9)* at Seoul, South Korea, August 18th–23rd, 2013.

7. **S. R. Pilli**, T. Banerjee, K. Mohanty, Quantum Chemical based Screening of Ionic Liquids for the Extraction of Phthalic Acid from Aqueous Solution, poster was presented in *International Conference on Advances in Chemical Engineering (ACE-2013)* at IIT Roorke, February 22nd-24th, **2013**.
8. **S. R. Pilli**, T. Banerjee, K. Mohanty, Application of Supported Ionic Liquid Membrane to the Phenol Removal from Wastewater, paper was presented in *“Annual Chemical Engineering Symposium (REFLUX” 1.0)*, organized by Department of Chemical Engineering, IIT Guwahati, April 6th-7th, **2013**.
9. **S. R. Pilli**, T. Banerjee, K. Mohanty, Quantum Chemical Based Screening of Ionic Liquids for the Extraction of Endosulfan from Aqueous Solution, paper was presented at *National Conference on Environment and Biodiversity of India [EBI 2011]*, Jamia Millia Islamia University, Jamia Nagar, New Delhi, December 30th-31st, **2011**.
10. **S. R. Pilli**, T. Banerjee, K. Mohanty, Ionic Liquids as Green Solvents for the Extraction of EDCs From Aqueous Solution: A Theoretical Approach, paper was presented in *CHEMCON-2011, 64th Annual Session of the Indian Institute of Chemical Engineers*, at M S Ramaiah Institute of Technology (MSRIT), Bangalore, December 27th-29th, **2011**.

Book Chapter:

1. **S. R. Pilli**, T. Banerjee, K. Mohanty, Theoretical Screening of Different Ionic Liquids for the Separation of Bisphenol A from Aqueous Solution: A COSMO-RS Approach. (2014) 166-175, In: Recent Trends in Water Science and Tech. (Ed. R. Tripathy) C.P. House Pvt. Ltd., India (ISBN: 978-93-80358-90-1).

Interns mentored:

1. Ankita Pathak and Kriti Saxena from Indian Institute of Technology (Banaras Hindu University), Varanasi, carried out two months internship on “Monoethanolamine as a Novel Solvent for Carbon Capture”.
2. Aman Verma and Shrabhan Das from Indian Institute of Technology, Delhi, carried out two months of internship on “Synthesis of Aspartic Acid and Glutamic Acid Based Ionic Liquids for CO₂ Capture”.
3. Nikhil Chimurkar and Prakash Choudhary from Indian Institute of Technology, Delhi, carried out two months of internship on “Synthesis of Triethylenetetramine-lysine and Triethylenetetramine-glutamine Ionic Liquids for Absorption of Carbon Dioxide Using a Foam Bed Reactor”.
4. Sabhye Singhal, from Delhi Technological University, Delhi carried out three months of internship on “Synthesis of amino acid based ionic liquids using ethanolamine for CO₂ absorption using foam bed reactor”.

QIP programmes/workshops/summer schools attended:

1. Participated in Indo-EU workshop on **“Electrochemical Technologies”** organized by Dept. of Chemical Engineering, IIT Delhi on 2nd March 2017.
2. Attended two day CONCLAVE on **“Strengthening Chemical Engineering curriculum for the Present and Future Scenario”**, organized by Dept. of Chemical Engg., NIT Tiruchirappalli, from 13th-14th March 2015.
3. Attended two day pedagogy training programme on **“Effective teaching Learning Process in Technical education”** organized by the NIT Tiruchirappalli, from 26th to 27th September 2014.
4. Attended the 9th Petrotech Summer School-2014 on **“Petroleum Refining and Petrochemicals”** conducted by Indian Oil R & D, IIPM and Petrotech at Indian Oil Institute of Petroleum Management (IIPM), Gurgaon from 2nd to 6th June 2014.
5. Attended and actively participated in the short-term course on **“Fuel Cell and Hydrogen Technology”** conducted by the Centre for Energy, IIT Guwahati, from 14th to 18th September 2009.

6. Attended and actively participated in the short-term course on **“Computational Fluid Dynamics for Chemical and Petroleum Engineers”** organized by the Department of Chemical Engineering, IIT Guwahati, from 8th to 12th June 2009.
7. Actively participated in **“Computational Fluid Dynamics Workshop”** organized by the Department of Chemical Engineering, IIT Guwahati, on 8th November 2009.

Courses Taught:

- Chemical Technology (UG)
- Process Modeling & Simulation (PG)
- Heat and Mass Transfer (UG)
- Fluid Mechanics (UG)
- Nanotechnology (UG)
- Interfacial Science (UG)
- Pollution Control in Process Industries (UG)
- Petroleum Refining and Testing

Computer Skills:

- Proficient in MS-Office
- *Tools:* MATLAB, Gaussion 03, GaussView 5.0, COSMOview, Molden and Chemdraw

Instrument usage skills Acquired:

- HPLC, GC, UV-visible absorption spectrophotometer, NMR, FTIR, and Densitometer

Scholarships and Achievements:

- Honored with **young scientist award** in International Conference on Green Technology for Environmental Pollution Prevention and Control (ICGTEPC-2014) at NIT Trichy on September 29th 2014.
- Recipient of **Travel Support from DST, Govt. of India** to attend an international conference which was held in Seoul, South Korea from 18 to 23rd August, 2013
- Qualified **GATE-2008 (CH 136383)** and secured all India rank of 1113 (Score 245, percentile 70.86)
- Served as an office bearer IChE Guwahati Regional Center, IIT Guwahati (2010-2011)

Professional Society Membership:

- Associate member in **IChE** since 2010 (AM-37906).

Referees:

- [1] **Prof. Kaustubha Mohanty** (Professor, Dept. of Chemical Engineering, IIT Guwahati, Assam 781039, Ph.:+91-361-2582267, Fax: +91-361-2690762; Email: kmohanty@iitg.ernet.in).
- [2] **Prof. Ashok N. Bhaskarwar** (Professor, Dept. of Chemical Engineering, IIT Delhi, Hauz Khas, New Delhi-110016, Ph: (091)-11-26591028; Email: ashoknbhaskarwar@yahoo.co.in or ashoknb@chemical.iitd.ac.in).
- [3] **Prof. Tamal Banerjee** (Professor, Dept. of Chemical Engineering, IIT Guwahati, Assam-781039, Ph.:+91-361-2582266, Fax: +91-361-2690762; Email: tamalb@iitg.ernet.in).
