

Curriculum Vitae

Dr Anand D Sawant

Associate Professor in Chemistry,
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Teaching Interests: Organic chemistry, Chromatography, Green chemistry & toxicology, Spectroscopy

Research Interests: Ionic liquid catalysis, Morphological tuning of materials for energy applications, Biomass and waste to value.

ACADEMIC QUALIFICATIONS

- 📖 PhD in chemistry (2011) from Shivaji University, Kolhapur, India. Title of Thesis “Synthesis and Applications of Spin-labeled oligonucleotides and Ionic Liquids”.
- 📖 MSc Organic Chemistry (2005) from Shivaji University, Kolhapur, India passed with First class.
- 📖 BSc Chemistry (2003) from Shivaji University, Kolhapur, India passed with First class and distinction.

ACADEMIC/ADMINISTRATIVE EXPERIENCE

- 📖 July 2011 to July 2017: Assistant Professor Sanjay Ghodawat Group of Institutions.
- 📖 December 2014 to February 2016: Head, First Year Engineering, Sanjay Ghodawat Group of Institutions.
- 📖 July 2017 to October 2021: Assistant Professor in Chemistry, Sanjay Ghodawat University.
- 📖 November 2021 to November 2023: Associate Professor in Chemistry and Dean Research, Sanjay Ghodawat University.

RESEARCH EXPERIENCE

Research Summary

Our group's research interests are divided into three projects that broadly address four (3, 7, 12, 13) UNSDGs. Project *Green* includes, Ionic Liquid (IL) catalyzed selective organic transformations where we are keen to develop task specific IL catalysts. We are preparing low cost heterogenized catalysts for organic transformations. In our project *Energy* we are focusing on preparing functionalized molecules that can give tools to control morphology of materials for energy applications and providing tools for Li ion battery repurposing. Project *Earth* deals with use of natural molecules for biological applications and conversion of biomass (agri- waste) to valuable products.

2016-2017

Post-doctoral research scholar at The University of Alabama, USA in the research group of Professor Robin D Rogers.

2013-2015

Research project entitled "*Task Specific Ionic Liquids for Organic Transformations*" funded by Shivaji University, Kolhapur.

2011-13

Collaborative research work with Professor M. B. Deshmukh (Shivaji University, Kolhapur) on preparation of functionalized crown ethers and ionic liquids for metal ion detection.

2006-2011






JRF- DRDO-Defense Research & Development Organization (Govt of India) sponsored project entitled "Synthesis of Spin-Labeled Oligonucleotides in DNA diagnostics".

JRF- Department of Science & Technology (Govt of India) project entitled "Preparation & Applications of Nanoparticles in Ionic Liquids".

2005-2006

Worked as Officer in Analytical Method Development Department at R&D Centre, Macleods Pharma Ltd, Andheri (E), Mumbai.

ORGANIC SYNTHESIS SKILLS

-  Design of synthetic routes using retro-synthetic strategies.
-  Synthesis of functionalized Task Specific Ionic Liquids (TSILs).
-  Synthesis of functionalized Nitroxide (radical) containing molecules (Spin-labels).
-  Synthesis of DNA backbone using H-phosphonate approach.
-  Preparation of TSILs (Task Specific Ionic Liquids) to carry out some chemo-selective organic reactions.

- ✚ Preparation of TSILs to utilize them for *insitu* generated metal nanoparticle catalyzed organic reactions.
- ✚ Prepare and Characterize silica supported catalyst for organic transformations.

ANALYTICAL CHEMISTRY SKILLS

- ✚ Monitoring progress of reactions using TLC, HPLC, and GCMS.
- ✚ Column Chromatographic separation of reaction products from reaction Mixture.
- ✚ Skilled in interpretation of structure of organic compounds using ¹H NMR, ¹³C NMR, Mass (fragmentation pattern), IR, and UV spectra.
- ✚ Characterization using ¹H NMR, ¹³C NMR, ESI-MS, DSC.
- ✚ Characterization of Supported solid catalysts using SEM-EDX and TEM analysis.

Hands on experience of NMR (Bruker Avance II 300), HPLC (LC Solutions 2010-Shimadzu), GCMS (GC Solution Shimadzu), IR (Bruker/PerkinElmer), DSC (Mettler Toledo), UV (Shimadzu), KF Autotitrator (Mettler Toledo).

RESEARCH PUBLICATIONS

Patent:

No	Title	Name of Inventors	Details	Year
1.	Magnetic Particles-Ionic Liquid Composite Materials and Methods of Making and Use Thereof.	R. D. Rogers, R. Kore, <u>A. D. Sawant</u> , P. K. Aduri	<i>US patent Publication No: 20190060883 Dated 28/02/2019</i>	2019

Research Papers:

SN	Authors	Title	Journal	Vol	pp	Year
1.	Vinayak Adimule, Pravin Kendrekar, Basappa C. Yallur, <u>A. D. Sawant</u>	Synthesis, Characterization, and Antibacterial Activity of Novel Poly-3-butyl Thiophene Embedded TiO ₂ @ZnO Hybrid Nanocomposites	<i>BioNanoScience</i>		https://doi.org/10.1007/s12668-023-01160-8	2023

2.	Digvijay Chougule, Komal Patil, Purnima Desai, <u>A. D. Sawant</u> and Suryabala Sawant*	Fe ₃ O ₄ -Cu Photocatalyst for Chemoselective Reduction of 5- Nitroisophthalic Acid	<i>International Journal of Scientific Research in Engineering and Management</i>	7 (3)		2023
3.	N. M. Shaikh, <u>A. D. Sawant</u> , B. G. Bagihalli, M. Challa, V. M. <u>Adimule</u>	Highly Active Mixed Au–Pd Nanoparticles Supported on RHA Silica Through Immobilised Ionic Liquid for Suzuki Coupling Reaction	<i>Topics in Catalysis</i>	https://doi.org/10.1007/s11244-021-01547-5		2022
4.	R. Kore, <u>A. D. Sawant</u> , R. D. Rogers	Recyclable Magnetic Fe ₃ O ₄ Nanoparticle-Supported Chloroaluminate Ionic Liquids for Heterogeneous Lewis Acid Catalysis	<i>ACS Sustainable Chemistry & Engineering</i>	9(26)	8797	2021
5.	R. Kore, Steven Kelly, <u>A. D. Sawant</u> , M. K. Mishra, R. D. Rogers	Are Ionic Liquids and Liquid Coordination Complexes Really Different? - Synthesis, Characterization, and Catalytic Activity of AlCl ₃ /Base Catalysts	<i>Chemical Communication</i>	56	6362	2020
6.	S. D. Jagadale, A. M. Teli, S. V. Kalake, <u>A. D. Sawant</u> , A. A. Yadav, P. S. Patil	Functionalized crown ether assisted morphological tuning of CuO nanosheets for electrochemical supercapacitors	<i>Journal of Electroanalytical chemistry</i>	816	99	2018
7.	S. D. Jagadale, <u>A. D. Sawant</u> , M. B. Deshmukh	Synthesis and Antimicrobial Evaluation of Novel Dibenzo-18-Crown-6-Ether Functionalized Pyrimidines	<i>Journal of Heterocyclic Chemistry</i>	54(4)	2307	2017
8.	S. D. Jagadale, <u>A. D. Sawant</u> , M. B. Deshmukh	Synthesis of Dibenzothiazolyldibenzo-18-Crown-6 and its Applications in Colorimetric Recognition of Palladium and as Antimicrobial Agent	<i>Journal of Heterocyclic Chemistry</i>	54(1)	161	2017

9.	<u>A. D. Sawant</u> , S. D. Jagadale, U. V. Desai, M. M. Salunkhe	Ionic liquid mediated mono-Michael addition of active methylene compounds	<i>New Journal of Chemistry</i>	39	6726	2015
10.	S. D. Jagadale, <u>A. D. Sawant</u> , P. P. Patil, D. R. Patil, A. G. Mulik, D. R. Chandam, S. A. Sankpal, M. B. Deshmukh	Synthesis of Novel Dibenzo-18-crown-6 ether Functionalized Benzimidazoles and its Applications in Colorimetric Recognition to Hg ²⁺ and as Antifungal Agents	<i>Journal of Heterocyclic Chemistry</i>	52(2)	468	2015
11.	S. D. Jagadale, <u>A. D. Sawant</u> , P. P. Patil, D. R. Patil, A. G. Mulik, D. R. Chandam, S. A. Sankpal, M. B. Deshmukh	Synthesis of Some Novel Quinone Diimine derivatives of Benzo-15-crown-5 for Applications in Hg ²⁺ recognition	<i>Luminescence</i>	29(6)	586	2014
12.	S. D. Jagadale, P. P. Patil, D. R. Patil, A. G. Mulik, D. R. Chandam, S. A. Sankpal, <u>A. D. Sawant</u> , M. B. Deshmukh	Synthesis of Some Novel 3-5-diarylpyrazole Derivatives of Dibenzo-18-Crown-6-Ether	<i>Indian Journal of Chemistry Sec B</i>	52(B)	1352	2013
13.	<u>A. D. Sawant</u> , N. B. Darvatkar, D. G. Raut, U. V. Desai, M. M. Salunkhe	Silica Supported Orthophosphoric Acid (H ₃ PO ₄ .SiO ₂): A Green Heterogenous Catalyst for Oxathioacetalization of Aldehydes	<i>Green Chem Lett Rev</i>	4(3)	235	2011
14.	<u>A. D. Sawant</u> , N. B. Darvatkar, D. G. Raut, M. M. Salunkhe	Recent Developments in Task Specific Ionic Liquids in Organic Transformations	<i>Green Chem Lett Rev</i>	4(1)	41	2011
15.	<u>A. D. Sawant</u> , N. B. Darvatkar, D. G. Raut, U. V. Desai, M. M. Salunkhe	An Ester appending Multifunctional Ionic liquids for Pd(II) Catalyzed Heck reaction	<i>Catalysis Communication</i>	12	273	2010

Recent conference presentations:

1. India- Australia Joint Workshop on Critical Minerals Research for Sustainable Transition to Green Energy; 3-4 March 2023, IIT Bombay.
2. ACS Fall Meeting 2022 Sustainability in Changing World; 21-25 August 2022.
3. RSC Catalysis Science & Technology 10th Anniversary Symposium; 16-17 November 2021.
4. 2nd Commonwealth Chemistry Posters; 30 September-1 October 2021.

ACHIEVEMENTS/MEMBERSHIPS

- ✚ **Excellent Academic Award 2018 by Sanjay Ghodawat University.**
- ✚ **Merit certificate for standing first in T.Y.B.Sc. Chemistry.**
- ✚ **Eklavya Merit Scholarship of Govt of Maharashtra.**
- ✚ **Shivaji University Merit Scholarship for Post-Graduation studies.**
- ✚ **Junior Research Fellowship (DST/DSRDO projects).**
- ✚ **Member-Association of Environmental Analytical Chemistry of India (AEACI), Bhabha Atomic Research Centre (BARC), Mumbai.**
- ✚ **Member-American Chemical Society.**
- ✚ **Affiliate Member-Royal Society of Chemistry.**
- ✚ **Member-Australia India Critical Minerals Research Hub (AICMRH).**

REFERENCE

Prof. Manikrao M. Salunkhe
(Ph.D. Supervisor)

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Shivaji University, Kolhapur,
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Prof. Robin D. Rogers
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