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E-mail: - pshejwalkar2004@gmail.com

PUSHKAR SUDHAKAR SHEJWALKAR

Current Position:

Post-doctoral research assistant at Tokyo University of Technology, Tokyo with Prof. Kenji Hara (Associate Professor)

Patent:

Japan Patent Office (application # 2015-152860, 2015/07/31)

Education:

University of Missouri Saint Louis, USA

Ph.D. : Organic Chemistry (Thesis title: Application of iron complexes as catalysts in C-O and C-C bond forming reactions) Advisor: Dr. Eike B. Bauer. August 2013

M.S. : Organic Chemistry, December 2012

University of Mumbai, India

M.Sc. : Organic Chemistry (Gold Medal), May 2005

B.Sc. : Chemistry (Minor: Biotechnology), May 2003

Work experience:

Post-doctoral research assistant Sept. 2013- Feb. 2015

Catalysis research center, Hokkaido, Japan

JSPS post doctoral fellow with Prof. Kenji Hara at Catalysis Research Center, Hokkaido University. Synthesis and characterization of Periodic mesoporous organosilicas immobilized with iron, and their application as catalyst in organic synthesis.

Research Assistant Jul. 2006- Jun. 2008

BASF-India Ltd., Mumbai, India

Proposed routes and synthesized library of organic molecules from milligram to kilograms scale that was used for, including but not limited to MOF's (Metal Organic Frameworks). Priced, negotiated and order chemicals and dispatched the newly synthesized molecules according to standard operating procedures.

Lecturer in Chemistry Jul. 2005-Jun. 2006

Ramnarain Ruia College, Mumbai, India

As a lecturer I was responsible for teaching the basic courses in Chemistry at college level. Apart from teaching, I was given a responsibility of making the solutions for the corresponding labs, grading labs and exams, conducting exams etc. During this time I was also selected for being the 'Expert' for the university level exams at University of Mumbai.

Teaching experience:

At University of Missouri-Saint Louis (2008-2013)

Chem 2633 : Organic Chemistry Laboratory

Chem 1121 : General Chemistry (Laboratory Section)

Chem 1121 : General Chemistry (Discussion sections)

Chem 1111 : General Chemistry (Laboratory section)

At Ramnarain Ruia College (2005-2006)

Chemistry text and laboratory management and teaching at 11th and 12th standard (H.Sc. Board)

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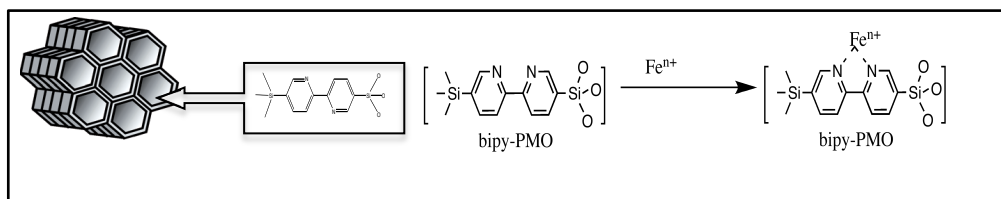
Teaching laboratory for Diploma in analytical chemistry (for working professionals)

Research Experience:

1) Synthesis of Periodic Mesoporous Organosilicas and its application as catalyst by supporting organometallic structures (Japan Patent application number 2015-152860).

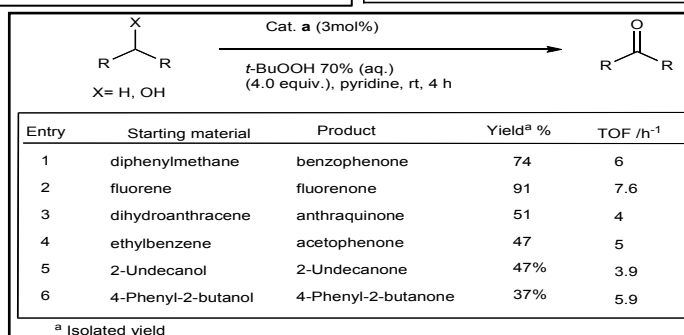
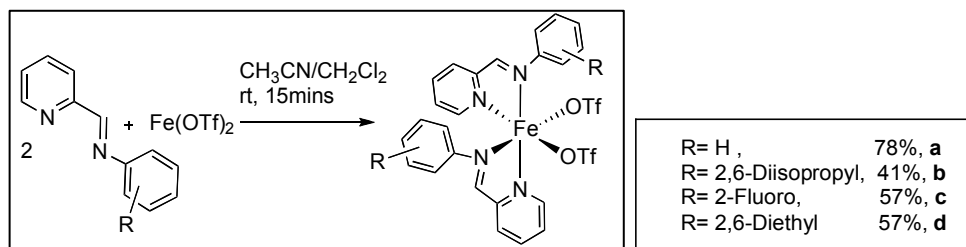
Periodic Mesoporous Organosilicas (PMOs) are relatively new type of Mesoporous support bearing the same physical strength as other mesoporous material but structurally more evolved as they are incorporated with functional organic backbone. Bipyridine incorporated PMOs immobilized by earth's abundant metal, iron, possess the highest chances of evolving as a catalyst system towards greener, safer, environmentally friendly and economical catalyst system that can be employed at production level. Such PMOs are shown to have high metal density, allowing the reactive metal centers to be close enough to show cooperative behavior during the reaction time course.

Such systems have been characterized by various instrumental techniques such as DRIFT, N₂ adsorption isotherm, XRF, X-ray Powder diffraction method, XAFS analysis etc. The catalysis products and mechanisms were monitored and analyzed by various methods such as multi nuclear NMR, IR, UV-Vis, GC and GC-MS etc.



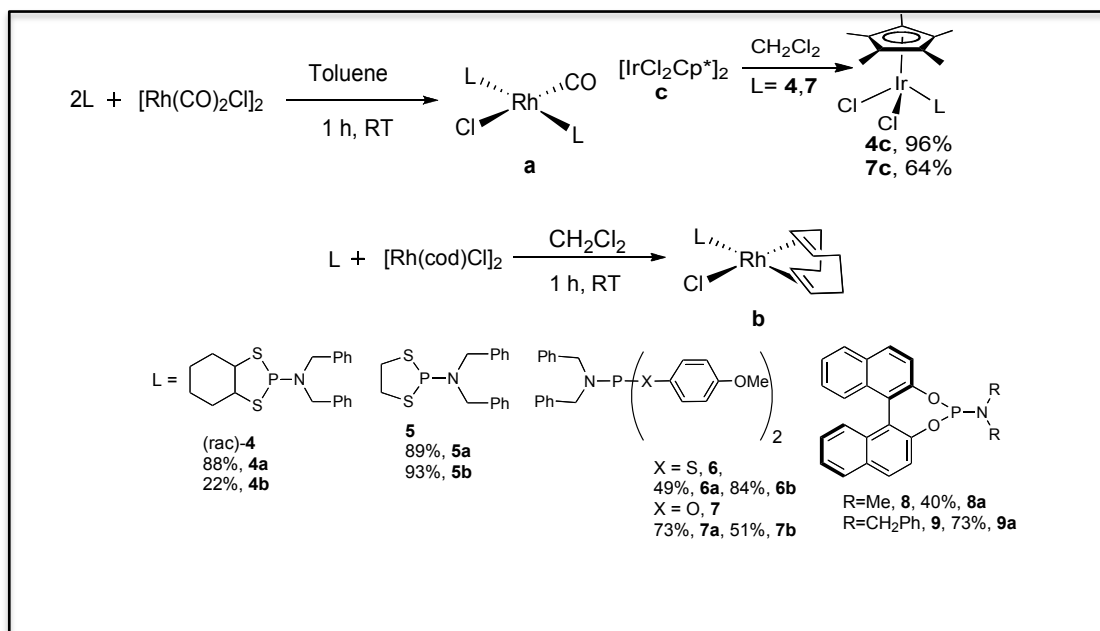
2) Synthesis of Iron(II) complexes, their characterization and application in oxidation chemistry³

Iron is a cheap and abundant element in earth's crust. It is one of the transition metal that has higher toxicity limit and potential to be used as catalyst in organic synthesis. Iron catalysis has emerged as one of the most actively researched area however, so do the challenges related to its use. Traditionally, iron complexes are synthesized *in situ* and applied as catalyst without actually knowing the active architecture of metal surroundings. Its paramagnetic nature makes characterization of iron complexes even difficult. In our lab, we synthesized Fe(II) complexes of α -iminopyridine that are paramagnetic in nature, which were characterized by NMR. The NMR structure of the complexes was in agreement with the X-ray and other analytical methods such as UV, IR, HRMS and Elemental analysis.



3) Synthesis of Rh and Ir complexes of novel amino-dithiaphospholane and phosphoramidodithioites⁴.

Catalytic activity at the metal centre can be manipulated by steric and electronic tuning of the ligands around it. On these lines, we developed a set of ligands that are tuned for their electronic properties. Phosphoramidite and phospholane ligands, which contain oxygen, were replaced by sulphur. The coordination properties of these ligands were then tested using Ir and Rh complexes, using NMR and IR (CO as probe). We noticed that these new ligands are more sigma donor than their corresponding oxygen counter part, but less sigma donating than corresponding phosphine counter-part. Thus now these ligands can be employed on complexes where the electronic tunings are needed for catalytic activity manipulations.



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Research Interests:

- Organometallic Chemistry, Iron chemistry
- Metal catalysis
- Periodic Mesoporous Organosilicas
- Oxidation chemistry, C-C bond forming reactions
- Characterization of reactive intermediates using instrumental techniques such as NMR, UV-vis spectroscopy, XAS analysis (EXAFS and XANES analysis).

Honors and Awards:

- JSPS (Japan Society for promotion of science) Postdoctoral research Fellowship for American and European Researcher -FY2013-2014.
- Sigma-Xi Poster Award at the Graduate Science Research Fair, University of Missouri-Saint Louis, April **2012**.
- Awardee of College of Arts and Science, University of Missouri-Saint Louis. October **2011** (Research Grant of \$3000)
- The Prof. A. N. Kothare *Gold Medal* jointly with the University of Mumbai given annually for achieving the highest score in Chemistry amongst all the students in University of Mumbai, May **2005**.
- The Vidya Bhushan Award and The Late Shri Kapoor Chand Vardhan Silver Medal – Annual **Best Student award** December **2005**.
- The Master Girish Iyer Trophy-**Best Volunteer award**, December **2005**.

Publications:

- 1) Neurotoxicity of Fruits, Seeds and Leaves of Plants in the Annonaceae Family, Smith R.E.; Tran K.; Shejwalkar P.; Hara, K. *Austin Neurol. Neurosci.*, **2016**, Vol. 1, in print
- 2) Evaluation of the effects of Passion Fruit Peel Flour (*Passiflora edulis fo. Favicarpa O. Deg*) on Metabolic Changes in HIV Patients with Lipodystrophy Syndrome Secondary to Antiretroviral Therapy. Marques, S.S.F.; Libonati, R.M.F.; Sabaa-Srur, A.U.O.; Luo, R.; Shejwalkar, P.; Hara, K.; Dobbs, T.; Smith, R.E. *Braz. J. Pharmacog.*, **2016**, 26, in print
- 3) New Bis(imino)pyridine Complexes of Iron(II) and Iron(III), and Their Catalytic Activity in the Mukaiyama Aldol Reaction. Shejwalkar, P; Rath, N. P.; Bauer, E. B. *Synthesis*, **2014**, 1, 57-66
- 4) ORAC values and anthocyanin content of Brazilian and Floridian acai (*Euterpe oleraceae* Mart.) Dupureur, C. M.; Sabaa-Srur, A. U. O.; Tran, K.; Shejwalkar, P.; Smith, R. E. *The Nat. Prod. Journal* **2012**, Vol. 2, 99-103.
- 5) New iron (II) α -iminopyridine complexes and their catalytic activity in the oxidation of activated methylene groups and secondary alcohols to ketones Shejwalkar, P.; Rath, N. P.; Bauer, E. B. *Dalton Trans.* **2011**, 7617-7631.
- 6) New amino-dithiaphospholanes and phosphoramidodithioites and their rhodium and iridium complexes Shejwalkar, P.; Sedinkin, S. L.; Bauer, E. B. *Inorg. Chim. Acta* **2011**, 209-218.

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- 7) New chiral phosphoramidite complexes of iron as catalytic precursors in the oxidation of activated methylene groups Shejwalkar, P.; Rath, N. P.; Bauer, E. B. *Molecules* **2010**, 2631-2650.
Invited contribution to the special issue "*Organometallic Chemistry*"

Talks:

- Synthesis and characterization of Iron(II) complexes of α -Imino pyridine ligands and their catalytic application in oxidation of activated methylene group and secondary alcohols. **Missouri Inorganic Day, St. Louis, MO**. May 2012, Shejwalkar, P.; Bauer, E. B.
- Synthesis and characterization of Iron(II) complexes of α -Imino pyridine and their catalytic application in oxidation of activated methylene group and secondary alcohols. **ACS 46th Midwest/ 39th Great Lakes regional Meeting, St. Louis, MO**. October 2011, Shejwalkar P., Bauer E. B.

Scientific Poster Presentation:

- Synthesis and characterization of Iron(II) complexes of α -Imino pyridine ligands and their catalytic application in oxidation of activated methylene group and secondary alcohols. **Graduate School Research Fair, University of Missouri-St. Louis**. April 2011, Shejwalkar P.; Bauer E. B. (**Recipient of prestigious Graduate Research Fair Prize from Material science section.**)
- Coordination chemistry of new amino-dithiaphospholanes and phosphoramidodithioites with rhodium and iridium. **44th ACS Midwest regional meeting, Iowa**. October 2010, Shejwalkar, P.; Bauer, E. B.
- Coordination chemistry of new amino-dithiaphospholanes and phosphoramidodithioites with rhodium and iridium, **Missouri Organic Chemistry Day, Columbia, MO**. April, 2010 Shejwalkar, P.; Sedinkin, S.; Bauer, E. B.
- New chiral phosphoramidite complexes of iron as catalytic precursors in the oxidation of activated methylene groups. **Graduate School Research Fair, University of Missouri-St. Louis**. April 2009 Shejwalkar, P.; Bauer, E. B.
- New chiral phosphoramidite complexes of iron as catalytic precursors in the oxidation of activated methylene groups. **Missouri Organic Chemistry Day, Columbia, MO**. April 2009, Shejwalkar, P.; Bauer, E. B.

Book reviewed:

Medicinal Chemistry - Fusion of Traditional and Western Medicine, Third Edition by Dr. Robert Smith

Reviewer:

Reviewer in several national and international journals including but not limited to Bentham Science Publications (chemistry and medicinal chemistry journals), Asian Journal of Organic and Medicinal chemistry (Asian Pub. Corp.), Journal of Indian Chemical Society.

Other activities:

- Judge for the Illinois Junior Academy of Science Region 12 Science Fair, ACS (*American Chemical Society*), **March, 17th 2012**.

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PUSHKAR SUDHAKAR SHEJWALKAR

- Exhibitor (representing *Dept. of Chemistry and Biochemistry, University of Missouri-Saint Louis*) at the Missouri State Fair **2012** and **2011** at Sedalia.
- Volunteer for new student orientation at the University of Missouri-Saint Louis. Spring-2009.
- Exhibitor (representing Dept. Of Chemistry and Biochemistry, UMSL) at the Science Fair at the Science Center in Saint Louis.

List of references*:-

Name of the Professor	Title	E-mail id	Contact number
Dr. Kenji Hara	Associate Professor, Tokyo University of Technology	haraknj@stf.teu.ac.jp	+81-042-637-2472
Dr. Eike B. Bauer	Professor, UMSL	bauere@umsl.edu	+1 (314) 516-5340
Dr. Robert Smith	Science Advisor, US-FDA, Assistant professor, Park University	Robert.smith@fda.hhs.gov	+1(913)-752-2191

* I would highly appreciate if you could let me know about contacting any/all references, so that I can let them know that they should expect a mail/call from you.