Dr. Deu Soudagar Bhange

Present Designation: **Assistant Professor**
Department of Chemistry,
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Personal Details

Date of birth: 4th June 1979
Gender: Male,
Nationality: Indian
Marital status: Married
Language Known: Hindi, English, Marathi
Blood Group: AB+

Academic Details

2008	Ph. D. Chemistry Awarded	Pune University, Pune, India.
2002	M.Sc., Chemistry 65.75 %	Shivaji University, Kolhapur
2000	B.Sc., Chemistry 66.76 %	Shivaji University, Kolhapur

Research Specialization

- Synthesis of zeolites, oxides, battery materials and their structure solution from powder XRD data.
- Diffusion dynamics using Neutron scattering techniques (QNS and NSE).
- Fabrication of environment friendly building materials e.g.; durable pigments like maya blue, zeolite based geopolymer cement etc.
- In-operando structural studies of battery electrode materials using in-operando XRD and XAS.

Teaching Experience

- U.G. : Nil
- P.G. : **3 years.**

Research Guidance

- M.Sc. Projects : **6**
- M.Phil/Ph.d. : Nil.

Fellowships/Post-Doctoral

April 2003-September 2008: Junior/Senior Research Fellowship for Ph.D.
Worked for the Ph.D. degree in the Catalysis Division, National Chemical Laboratory, under the guidance of Dr. (Mrs) Veda Ramaswamy for thesis entitled "**Structural studies of silicalite and metallosilicate molecular sieves of MFI type using non-ambient powder X-ray diffraction technique**".

October, 2008-September 2009 : CNRS Post-Doctoral Fellowship:
Worked as Post-Doctoral (CNRS) Fellow in the Department: Condensed Matter, Materials and Functions, Institut NEEL, Grenoble, France, on the project entitled, **"Study of hybrid materials by quasi-elastic neutron scattering"** in the group of Dr. Eric Dooryhee**.**

April, 2010 to April 2011: Post-Doctoral Research Fellowship:
Worked as Post-doctoral Research associate to work in the field of environmental sciences and catalysis, under the guidance of Prof. S.B. Hong on the project entitled, "S**tructure solution of novel zeolites from powder diffraction data**" at Pohang University of Science and Technology, Pohang, South Korea.

March, 2015 to March 2016: Research Professor (Post-Doctoral)
Worked on Advanced characterization of Energy storage materials especially for rechargeable battery applications at Dongguk University, Seoul, South Korea.

Memberships/Other Charge

- Active member of International Centre for Diffraction Data (**ICDD**), Newton Square, PA, USA.

Honours/Rewards

- Awarded **Junior Research Fellowship (UGC)** through NET Examination by Council for Scientific and Industrial Research, Govt. of India, New Delhi (June 2002).
- Qualified for **State Eligibility Test for lectureship (SET)** in chemical sciences conducted by University of Pune, (Held on Aug, 2002).
- Worked as **Expert Evaluator for the Research Proposal evaluation funded by the Romanian Government** through the **National Council for Scientific Research**.

Courses/Orientation programmes

a) Completed one month DST sponsored Orientation Programme for Research Scholars at Cochin university of Science & technology, Kochi, Kerala during 6-29 October 2003 on basic concept of catalysis, chemistry of catalysis preparation, catalysis in petroleum refining, Green chemistry, characterization by various spectroscopic techniques.

b) Completed six-month course at National Chemical Laboratory, India 2004-2005 on various catalyst fundamentals and basic concept in catalysis.

c) Completed one-month course on 'Higher European Research Course for Users of Large Experimental Systems' at Grenoble, France 2009 in the field of **Neutron and Synchrotron Radiation Spectroscopies** (Chemistry, Materials Science, Industrial applications).

International Research Publications

1. Solution combustion synthesis of heterostructure bismuth titanate nanocomposites: structural phases and its correlation with photocatalytic activity, P.D. Bhange, D.S. Shinde, **D.S. Bhange,** G.S. Goakvi, ***International Journal of Hydrogen Energy,*** Accepted, **[IF=3.4]**
2. Improving the sodium storage capacity of tunnel structured $Na_xFe_xTi_{2-x}O_4$ (x = 1, 0.9 & 0.8) anode materials by tuning sodium deficiency, **D.S. Bhange,** G. Ali, J.-Y. Kim, K.Y. Chung, K.-W. Nam, ***Journal of Power Sources,*** Accepted, https://doi.org/10.1016/j.jpowsour.2017.08.112 **[IF=6.34]**
3. Honeycomb-layer structured $Na_3Ni_2BiO_6$ as a high voltage and long life cathode material for sodium-ion batteries, D.S. Bhange, G. Ali, D.-H. Kim, D.A. Anang, T.J. Shin, M.-G. Kim,Y.-M. Kang, K.-Y. Chung, K.-W. Nam, ***Journal of Materials Chemistry A,*** 5 (2016) 1300-1310. **[IF=8.26]**
4. Nickel-titanium Oxide as a Novel Anode Material for Rechargeable Sodium-ion Batteries, R.S. Kalubarme, A. Inamdar, **D.S. Bhange,** H. Im, S.W. Gosavi, C.-J. Park, ***Journal of Materials Chemistry A,*** 4 (2016) 17419-17430. **[IF=8.26]**
5. Photocatalytic degradation of methylene blue on Sn-doped titania nanoparticles synthesized by solution combustion route, P.D. Bhange, S.V. Awate, R.S. Gholap, G.S. Gokavi, **D.S. Bhange**, ***Materials Research Bulletin,*** 76 (2016) 264-272. **[IF=2.4]**
6. A modular approach for multicomponent synthesis of amidines using modified Scolecite, M. Jagadale, P. Bhange, R. Salunkhe, **D.S. Bhange,** M. Rajmane, G. Rashinkar, ***Applied Catalysis A: General,*** 511 (2016) 95-105. **[IF=4.01]**
7. Structural characterization of various alkali cation forms of synthetic aluminosilicate natrolites, J. Shin, **D.S. Bhange**, M. B. Park, S.B. Hong, ***Microporous and mesoporous Materials,*** 210 (2015) 20-25. **[IF=3.365]**
8. Visible Light Active Superoxide Modified Nanocrystalline Anatase Titania, P.D. Bhange, **D.S. Bhange,** G.S. Gokavi, ***Journal of Nanoengineering and Nanomanufacturing*** 5 (2015) 216-220
9. H_2O_2 Assisted Mesoporous Ti-SBA-15 as Photocatalyst for Methylene Blue Degradation Under Visible Light, P.D. Bhange, **D.S. Bhange,** G.S. Goakvi, ***Advanced Porous Materials,*** 2 (2014) 261-266. **[IF=yet to be decided]**
10. Comment on 'Novel nanocrystalline zinc silver antimonate ($ZnAg_3SbO_4$): an efficient & ecofriendly visible light photocatalyst with enhanced hydrogen generation' by S. A. Mahapure, P. K. Palei, L. K. Nikam, R. P. Panmand, J. D. Ambekar, S. K. Apte and B. B. Kale, J. Mater. Chem. A, 2013, 1, 12835. **D.S. Bhange,** ***Journal of Materials Chemistry A,*** 2 (2014) 9899-9900. **[IF=8.26]**
11. Immobilisation of bile salt hydrolase enzyme on mesoporous SBA-15 for co-precipitation of cholesterol.
    P. Bhange, N. Sridevi, **D.S. Bhange**, A.S. Prabhune, V. Ramaswamy
    International Journal of Biological Macromolecules 63 (2014) 218-224. **[Impact Factor =2.6]**
12. Thermal expansion studies of silicalite-2 molecular sieves of MEL (ZSM-11) topology.
    D.S. Bhange, Veda Ramaswamy,

Journal of Porous Materials, 19 (2012) 301-305. **[Impact Factor =1.348]**

13. Thermal expansion studies of stannosilicate molecular sieve with MFI type structure.
    P.S. Niphadkar **D.S. Bhange,** K. Selvaraj, P.N. Joshi,
    Chemical Physics Letters, 548 (2012) 51-54. **[IF=2.145]**
14. Erratum to "Sorption of homologues of radionuclides by synthetic ion exchanger" [Micropor. Mesopor. Mater. 142 (2011)
    D.S. Bhange, ***Microporous and mesoporous Materials,*** 153 (2012) 142-143. **[IF=3.365]**
15. MgCl2.6PhCH2OH - A New Molecular Adduct as Support Material for Ziegler-Natta Catalyst: Synthesis, Characterization and Catalytic Activity
    G. Edwin, K. Thushara, D.S. Bhange, T. Ajithkumar, P. Rajamohanan, S. Bhaduri, C.S. Gopinath
    Dalton Transactions 40 (2011) 10936-10944. **[IF=3.806]**
16. Tetrahedral Atom Ordering in a Zeolite Framework: A Key Factor Affecting its Physicochemical Properties.
    J. Shin, D.S. Bhange, M.A. Camblor, Y. Lee, K.W. Jung; I.-S. Nam, and S.B. Hong
    Journal of the American Chemical Society 133 (2011) 10587–10598**. [IF=10.677]**
17. Direct synthesis of well-ordered mesoporous Al-SBA-15 and its correlation with the catalytic activity
    Pallavi Bhange, Deu S. Bhange, Sivaram Pradhan, Veda Ramaswamy,
    Applied Catalysis A: General, 400 (2011) 176-184. **[IF=3.41]**
18. Role of doping-induced photochemical and microstructural properties in the photocatalytic activity of $InVO_4$ for splitting of water.
    K. Rakesh, S. Khaire, D. Bhange, P. Dhanasekaran, S. S. Deshpande, S. V. Awate and N. M. Gupta
    Journal of Materials Science**,** 46 (2011) 5466-5476. **[IF=2.163]**
19. Synthesis and Structural Characterization of Aluminogermanate Pharmacosiderites with Different Crystal Symmetries.
    Jiho Shin, **Deu S. Bhange**, Miguel A. Camblor, Suk Bong Hong,
    Microporous and mesoporous Materials, 139 (2011) 148-157. **[IF=3.365]**
20. Studies of the diffusive motions of N',N'-dimethyl-paranitroaniline encapsulated in silicalite-1 matrix using neutron spin-echo spectroscopy.
    D.S. Bhange, C. Dejoie, F. Porche, N. Malikova, P. Martinetto, E. Dooryhee and M. Anne
    The European Physical Journal: Special Topics**,** 189 (2010) 279–284. **[IF=1.796]**
21. Enhanced negative thermal expansion in MFI molecular sieves by varying framework composition
    D.S. Bhange*and Veda Ramaswamy
    Microporous and mesoporous Materials, 130 (2010) 322-326. **[IF=3.365]**
22. Structure, Electronic Structure, Optical and Dehydrogenation catalytic Study of $(Zn_{1-z}In_z)(O_{1-x}N_x)$Solid Solution.
    M. Mapa, K. Sivaranjani, **D. S. Bhange,** B. Saha, P. Chakraborty, A. K. Viswanath, and C. S. Gopinath,
    Chemistry of Materials, 22 (2010) 565-578. **[IF=8.238]**
23. Doping-induced micro-structural, textural and optical properties of $In_2Ti_{1-x}V_xO_{5+\delta}$ semiconductors and their role in the photocatalytic splitting of water.
    Pallavi Shah, **Deu S. Bhange,** Aparna S. Deshpande and Narendra M.Gupta
    Materials Chemistry and Physics 117 (2009) 399-407. **[IF=2.072]**
24. Non-isothermal kinetic studies of the template decomposition from silicalite-1 framework- HTXRD and thermo gravimetric analysis.
    D. S. Bhange, N. A. Pandya, R. K. Jha and Veda Ramaswamy,
    Microporous and mesoporous Materials, 113 (2008) 64-71. **[IF=3.365]**
25. Photocatalytic decomposition of methylene blue on nanocrystalline titania prepared by different methods.
    Veda Ramaswamy, N.B. Jagtap, S. Vijayanand, **D. S. Bhange** and P.S. Awati
    Materials Research Bulletin 43 (2008) 1145-1152. **[IF=1.913]**
26. Synthesis and Characterization of NCL-5, NCL-6 and NCL-7: New Zeolites Enriched With Polymorph B of BEA Family.
    M. D. Kadgaonkar, M. W. Kasture, **D. S. Bhange**, P. N. Joshi, V. Ramaswamy, N. M. Gupta and R. Kumar, ***Microporous and mesoporous Materials***, 105 (2007) 82-88. **[IF=3.365]**
27. Nanostructured Thin films of Anthracene by Liquid-Liquid Interface Recrystallization Technique.
    R. R. Hawaldar, A.M. Funde, **D. S. Bhange**, V. Ramaswamy, S. R. Jadkar, S. D. Sathaye, U. P. Mulik & D. P. Amalnerkar, ***Solid State Phenomena*** 119 (2007) 27-34. **[IF=not known]**
28. NCL-7, A Novel All Silica Analog of Polymorph B rich Member of BEA Family: Synthesis and Characterization.

M. D. Kadgaonkar, M. W. Kasture, **D. S. Bhange**, P. N. Joshi, Veda Ramaswamy and R. Kumar
Microporous and mesoporous Materials, 101 (2007)108-114. **[IF=3.365]**

29. Thermal stability of the MFI type metallosilicate molecular sieves – an in situ HTXRD study.
D. S. Bhange and Veda Ramaswamy
Materials Research Bulletin, 42 (2007) 851-860. **[IF=1.913]**

30. High temperature thermal expansion behavior of silicalite-1 molecular sieve: in situ HTXRD study.
D. S. Bhange and Veda Ramaswamy
Microporous and mesoporous Materials**,** 103 (2007) 235-242. **[IF=3.365]**

31. Negative thermal expansion in zirconium silicalite having MFI structure.
D.S. Bhange and Veda Ramaswamy
Materials Research Bulletin, 41 (2006)1392-1402. **[IF=1.913]**

32. Chemical synthesis and compositional analysis of [Mo(S1-xSex)(2)] semiconductor thin films.
B.D. Ajalkar, S.H. Burungale, **D.S. Bhange** and P. N. Bhosale
Journal of Materials Science**,** 39 (2004) 1659-1664. **[IF=2.163]**

Papers and posters presented at symposia and conferences: International

1. Structural Characterization of Gallosilicate Analogues of Natrolite Zeolite.
D.S. Bhange, J. Shin, S.B. Hong
13th European Powder Diffraction Conference, Grenoble, France, held during 28-31 October 2012.

Major Research Project work (ongoing and sanctioned)

1. Synthesis and structural characterization of novel metallosilicate zeolites and their applications. Funding Agency: University Grant Commission, New Delhi, India (status ongoing).

2. Project Title: Synthesis, Structural Characterization And Photocatalytic Applications Of Titanium Based Mixed Metal Oxides.
Funding Agency: Science and Engineering Research Board, New Delhi, India (will be implemented soon).