Centre of Biomedical Research

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## Education

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| Ph.D (Organic Chemistry): | Oct '08, Department of Pharmaceutical and Medicinal Chemistry, University of Münster, Germany. |
| M.Sc. (Organic Chemistry): | May '04, Department of Chemistry, Indian Institute of Technology Bombay, India. |
| B.Sc. (Chemistry ): | Jun '01, Zakir Husain College, University of Delhi, India. |

## Professional Experience

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| Mar 14 – current | : | Assistant Professor, Centre of Biomedical Research, Lucknow, India. |
| Feb 13 – Feb 14 | : | Postdoctoral Fellow with Prof. Yamuna Krishnan, National Centre for Biological Sciences, TIFR, Bangalore, India. |
| Feb 09 – Sep 12 | : | Postdoctoral Fellow with Prof. Michael Müller, Institute for Pharmaceutical Sciences, University of Freiburg, Germany. |
| Nov 08 – Jan 09 | : | Postdoctoral Fellow with Prof. Berhard Wünsch, Department of Pharmaceutical and Medicinal Chemistry, University of Münster, Germany. |

## Current Research Interests

Biocatalysis, Enzymology, Elucidation of Biosynthetic Pathways, Chemoenzymatic Synthesis, Superoxide Biochemistry, RNA catalysis

## Awards

Oct 05 : Graduate Student Fellowship, NRW Graduate School of Chemistry, University of Münster, Münster, Germany.
Jun 04 : Qualified for joint CSIR-UGC Junior Research Fellowship.
Mar 04 : Qualified GATE 2004, Percentile : 97.19. All India Rank: 90.
Jul 03 : Madhab Pandya Merit Scholraship, Indian Institute of Technology, Bombay, India.
Dec 03 : Madhab Pandya Merit Scholraship, Indian Institute of Technology, Bombay, India.
Mar 01 : College Crest, Zakir Husain College, University of Delhi, India.
Feb 02 : S. P. Suri Memorial Award for being the topper in Zakir Husain College, Univeristy of Delhi, India.
Jan 01 : S. P. Suri Memorial Award, Zakir Husain College, Univeristy of Delhi, India.
Jan 99 : S. P. Suri Memorial Award, Zakir Husain College, Univeristy of Delhi, India.

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## List of Publications

15. Dual-catalytic NAD(P)+-regeneration by molecular oxygen. J. Haas, M. Schätzle, **S. M. Husain**, W. Hummel, M. Müller and S. Lüdeke *submitted*
14. Tetrahydroxynaphthalene Reductase – Catalytic Properties of an Enzyme Involved in Reductive Asymmetric Naphthol Dearomatization M. A. Schätzle, **S. M. Husain**, M. Müller *Book Chapter-Kroutil (in press)*
13. Diversity in Reduction with Short Chain Dehydrogenases (T4HNR, T3HNR, GDH) D. Conradt, M. A. Schätzle, **S. M. Husain**, M. Müller *Chem. Cat. Chem.* ***2015,*** DOI: 10.1002/cctc.201500605.
12. The Unprecedented Role of Hydronaphthoquinone Tautomers in Biosynthesis. **S. M. Husain**, M. A. Schätzle, S. Lüdeke, M. Müller *Angew. Chem. Int. Ed.* **2014**, *53*, 9806-9811.
    *Hot Paper*
11. Tautomers of Anthrahydroquinones: Enzymatic Reduction and Implications for Chrysophanol, Monodictyphenone, and Related Xanthone Biosyntheses. M. A. Schätzle, **S. M. Husain**, S. Ferlaino, M. Müller *J. Am. Chem. Soc.* **2012**, *134*, 14742-14745.
10. Biomimetic Asymmetric Synthesis of (*R*)-GTRI-02 and (3*S*,4*R*)-3,4-Dihydroxy-3,4-dihydronaphthalene-1(2*H*)-ones. **S. M. Husain**, M. A. Schätzle, C. Röhr, S. Lüdeke, M. Müller *Org. Lett.* **2012**, *14*, 3600-3603.
9. Stereoselective synthesis of bulky 1,2-diols with alcohol dehydrogenases. J. Kulig, R. C. Simon, C. A. Rose, **S. M. Husain**, M. Häckh, S. Lüdeke, K. Zeitler, W. Kroutil, M. Pohl, D. Rother *Catal. Sci. Technol.* **2012**, *2*, 1580-1589.
8. Microwave assisted synthesis of 3-benzazepin-2-ones as building blocks for 2,3-disubstituted tetrahydro-3-benzazepines. S. Sarkar, **S. M. Husain**, D. Schepmann, R. Fröhlich, B. Wünsch *Tetrahedron* **2012**, *68*, 2687-2695.
7. Tetrahydroxynaphthalene Reductase – Catalytic Properties of an Enzyme involved in Reductive Asymmetric Naphthol Dearomatization, M. A. Schätzle, S. Flemming, **S.M. Husain**, M. Richter, S. Günther, M. Müller *Angew. Chem. Int. Ed.* **2012**, *51*, 2643-2646.
6. Stereoselective reduction of 2-hydroxy ketones towards *syn*- and *anti*-1,2-Diols. **S. M. Husain**, T. Stillger, P. Dünkelmann, M. Lödige, L. Walter, E. Breitling, M. Pohl, M. Bürchner, I. Krossing, M. Müller, D. Romano, F. Molinari *Adv. Synth. Catal.* **2011,** *353,* 2359-2362.
5. Enantioselective Synthesis of a 2,2-Disubstituted Tetrahydro-3-benzazepine as Novel Receptor Antagonist. **S. M. Husain**, R. Fröhlich, D. Schepmann, B. Wünsch *Z. Naturforsch.* **2010,** *65b,* 191-196.
4. Asymmetric Synthesis and σ receptor affinity of enantiomerically pure 1,4-disubstituted-tetrahydro-1*H*-3-benzazepines. **S. M. Husain**, M. T. Heim, D. Schepmann, B, Wünsch *Tetrahedron: Asymmetry*, **2009**, *20*, 1383-1392.

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3. Asymmetric Synthesis of Enantiomerically pure 2-Substituted-3-benzazepines and Their Affinity to $\sigma_1$ Receptors. **S.M. Husain**, R. Fröhlich, D. Schepmann, B. Wünsch *J. Org. Chem.* **2009,** *74,* 2788-2793.
2. A very short asymmetric synthesis of enantiomerically pure methyl substituted tetrahydro-3-benzazepines. **S. M. Husain**, R. Fröhlich, B. Wünsch *Tetrahedron: Asymmetry* **2008**, *19*, 1613-1616.
1. Synthesis of Phenylacetic Acids with 2-Oxoalkyl Substituents in *ortho*-Position from o-Phenylenediacetic Acid. **S. M. Husain**, B. Wünsch *Synthesis* **2008,** *17,* 2729-2732.

## Invited Talks

1. The role of quinone-hydroquinone tautomers in Biosynthesis of Natural Products, Department of Chemistry, Indian Institute of Technology Ropar, India. Jan, **2014**.
2. Unraveling the role of enzymes in Biosynthesis, Centre of Biomedical Research, Lucknow, India. Sep, **2013**.
3. Unraveling the role of enzymes in Biosynthesis, CSIR-National Institute for Interdisciplinary Science and Technology Thiruvananthapuram, India. Jul, **2013**.
4. Unraveling the Biosynthesis of Natural Products using Chemical Tools, Department of Chemistry, Indian Institute of Science Education and Research Mohali, India. Mar, **2013**.
5. The role of quinone-hydroquinone tautomers in Biosynthesis of Natural Products, Department of Chemistry, Shiv Nadar University Noida, India. Dec, **2012**.
6. Role of quinone-hydroquinone tautomers in Biosynthesis, Indian Institute of Technology Indore, India. Dec, **2012**.
7. Specifying the role of quinone-hydroquinone tautomers in Biosynthesis of natural products using NADPH dependent enzymes, Department of Chemistry, Indian Institute of Technology Patna, India. Nov, **2012**.

## Poster Presentations

1. Asymmetric Synthesis of 2-substituted-3-Benzazepines. **S. M. Husain**, B. Wünsch; Sep **2006**, IRTG Symposium, Münster, Germany.
2. Asymmetric Synthesis of substituted-3-benzazepines **S. M. Husain**, R. Fröhlich, B. Wünsch; Jun **2007**, 8$^{th}$ Tetrahedron Symposium, Berlin, Germany.
3. Asymmetric Synthesis of substituted-3-benzazepines. **S. M. Husain**, R. Fröhlich, B. Wünsch; May **2008**, IRTG Symposium, Münster, Germany.
4. Natural ProductSynthesis by the use of Tetrahydroxynaphthalene Reductase from *Magnaporthe grisea* **S. M. Husain**, M. Schätzle, M. Richter, M. Müller, Feb **2011**, 23. Irseer Naturstofftage, Irsee, Germany.

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5. Lawsone and Tetrahydroxynaphthale reductae **S. M. Husain**, M. Schätzle, M. Richter, M. Müller; Jul **2011**, Albert-Ludwigs Universität Freiburg, Germany.
6. Tetrahydroxynaphthalene Reductase: One enzyme, one substrate & many products **S. M. Husain**, M. Schätzle, M. Müller; Sep, **2012**, Biocat 2012, Hamburg, Germany.

## Conferences

1. 6th Status Seminar Chemical Biology, "Natural products and nucleic acid as chemical tools", Nov **2009**, Frankfurt am Main, Germany.
2. Symposium on Biocatalysis, Jan 2010, EMPA, St. Gallen, Switzerland.