

# Curriculum Vitae

## Soumitra V. Athavale

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*Organic Chemistry, Directed Evolution, Chemical Biology*

### EDUCATION

- University of Illinois, Urbana-Champaign (UIUC)** Aug 2014 – Aug 2019  
Ph.D. Organic Chemistry | Advisor: Prof. Scott E. Denmark  
Doctoral Dissertation: Mechanistic Studies on the Asymmetry Amplifying, Autocatalytic Soai Reaction.
- Indian Institute of Science Education and Research (IISER) Pune** Aug 2008 – May 2013  
B.S.–M.S. Dual Degree in Chemistry and Biology

### PROFESSIONAL EXPERIENCE

- University of Los Angeles, California, USA** since July 2023  
Assistant Professor | Department of Chemistry and Biochemistry
- California Institute of Technology, USA** Oct 2019 – Jun 2023  
Postdoctoral Scholar | Advisor: Prof. Frances H. Arnold  
Engineering proteins for non-natural function and catalytic chemistry through directed evolution.
- Indian Institute of Science Education and Research (IISER) Pune, India** Aug 2013 – May 2014  
Research Internship | Advisors: Prof. Sanjeev Galande, Prof. S. G. Srivatsan  
Development of chemical biology tools for *in-vivo* nucleic acid labeling.
- University of Gottingen, Institute for Organic and Biomolecular Chemistry, Germany** May 2012 – Aug 2012  
DAAD-WISE Fellow | Advisor: Prof. Ulf Diederichsen  
Design of a New Spin labelled amino acid for EPR Spectroscopy

### AWARDS

- Finalist, 2021 Merck Research Award for Underrepresented Chemists of Color.
- 2021 ACS Green Chemistry Institute (ACS GCI) Pharmaceutical Roundtable Student Travel Grant.
- **Co-winner, 2<sup>nd</sup> Merck Compound Challenge 2020** – a global retrosynthesis competition that saw participation from 132 teams.  
*Participated and won as a single-member team. The other winner was a ten-member group from MPI, Mulheim, Germany.*  
*News highlights by Merck, Merck India, Chemistry UIUC, Bio-Patrika.*
- 2020 ACS Green Chemistry Institute, Pharmaceutical Roundtable (ACS-GCIPR) Research Grant.
- Coleman Fellowship 2017-2018, Departmental Fellowship 2015-2016, Chemistry Department, UIUC.
- DAAD-WISE 2012 Fellow for summer internship at the University of Gottingen, Germany.
- CSIR-JRF All India Rank 31 (Dec 2012 NET).
- INSPIRE Fellowship from Department of Science and Technology (DST), India during study at IISER Pune (2008-2013).
- Gold Medal at the Indian National Chemistry Olympiad Training Camp for IChO 2008 at HBCSE, TIFR.

### PUBLICATIONS

#### Primary Research (7):

- **Athavale, S. V.\* (co-corresponding author);** Gao, S.; Das, A.; Mallojjala, S.; Alfonzo, E.; Long, Y.; Hirschi, J. S.; Arnold, F. H. Enzymatic Nitrogen Insertion into Unactivated C–H bonds. *J. Am. Chem. Soc.* **2022**, *144* (41), 19097-19105.  
*Highlighted by Derek Lowe - 'Zapping in Amine Groups' - on his blog 'In the Pipeline' hosted by Science magazine.*  
*Highlighted by Benjamin List and Marian Guillén in Synfacts 2023; 19(01): 0081*
- Liu, Z.; Qin, Z.; Zhu, L.; **Athavale, S. V.;** Sengupta, A.; Jia, Z.; Garcia-Borras, M.; Houk, K. N.; Arnold, F. H. An Enzymatic Platform for Primary Amination of 1-Aryl-2-alkyl Alkynes. *J. Am. Chem. Soc.* **2022**, *144* (1), 80-85.
- **Athavale, S. V.;** Gao, S.; Liu, Z.; Mallojjala, S.; Hirschi, J. S.; Arnold, F. H. Biocatalytic, Intermolecular C-H Bond Functionalization for the Synthesis of Enantioenriched Amides. *Angew. Chem. Int. Ed.* **2021**, *60* (47), 24864-24869.

- **Athavale, S. V.**; Simon, A.; Houk, K. N.; Denmark, S. E. Demystifying the Asymmetry-Amplifying, Autocatalytic Behaviour of the Soai Reaction through Structural, Mechanistic and Computational Studies. *Nat. Chem.* **2020**, *12* (4), 412-423.  
*Highlighted by Chemistry World ('Mirror-symmetry breaking reaction's mechanism solved after 25 years'), Science, Chemistry UIUC, Chemistry UCLA, Bio-Patrika.*
- **Athavale, S. V.**; Simon, A.; Houk, K. N.; Denmark, S. E. Structural Contributions to Autocatalysis and Asymmetric Amplification in the Soai Reaction. *J. Am. Chem. Soc.* **2020**, *142* (43), 18387-18406.
- Robb, K. A.; **Athavale, S. V.**; Denmark, S. E. Unusual Kinetic Profiles for Lewis Base-Catalyzed Sulfenocyclization of Ortho-Geranylphenols in Hexafluoroisopropyl Alcohol. *Synlett* **2019**, *30* (14), 1656–1661.
- Sawant, A. A.; Tanpure, A. A.; Mukherjee, P. P.; **Athavale, S.**; Kelkar, A.; Galande, S.; Srivatsan, S. G. A Versatile Toolbox for Posttranscriptional Chemical Labeling and Imaging of RNA. *Nucleic Acids Res* **2016**, *44* (2), e16–e16.

Reviews, Perspectives and Book Chapters (5):

- **Athavale, S. V.**; Denmark, S. E. Demystifying the Soai Reaction. In *Asymmetric Autocatalysis: The Soai Reaction*, Soai, K.; Kawasaki, T.; Matsumoto, A.; Eds., The Royal Society of Chemistry, **2023**, ISBN:978-1-83916-261-9.
- **Athavale, S. V.**; Chen, K.; Arnold, F. H. Engineering Enzymes for New-to-Nature Carbene Chemistry. In *Transition Metal-Catalyzed Carbene Transformations*, Wang, J; Che, C-M.; Doyle, M. P., Eds., Wiley-VCH, **2022**, pp 95-138.
- Miller, D.; **Athavale, S. V.**; Arnold, F. H. Combining Chemistry and Protein Engineering for New-to-nature Biocatalysis. *Nat. Synth.* **2022**, *1*, 18-23.
- **Athavale, S. V.** The Katalytic Speedometer. *Nat. Phys.* **2020**, *16*, 704.
- Zahrt, A. F.; **Athavale, S. V.**; Denmark, S. E. Quantitative Structure–Selectivity Relationships in Enantioselective Catalysis: Past, Present, and Future. *Chem. Rev.* **2020**, *120* (3), 1620-1689.

## PRESENTATIONS

- **Invited lecture** at the Protein Engineering and Biocatalysis Congress, Philadelphia, October 2022.
- **Oral** presentation at the 32<sup>nd</sup> International Symposium on Chirality, Chicago, July 2022.
- **Oral** presentation at the Gordon Research Seminar (GRS – Systems Chemistry – Fundamental Principles and Emergent Behavior within Networks of Molecules), June 2022.
- **Poster** presentation at the Gordon Research Conference (GRC – Systems Chemistry – Life-Like and Emergent Behavior in Complex Molecules and Ensembles), June 2022.
- **Oral** presentation at the 15<sup>th</sup> International Symposium on Biocatalysis and Biotransformations (Biotrans), July 2021, Graz (virtual).
- **Invited lecture** at GSK's 'Green and Sustainable Chemistry, Academic Collaborations' symposium, July 2021 (virtual).
- **Oral** presentation at the ACS 25<sup>th</sup> Annual Green Chemistry and Engineering Conference, June 2021 (virtual).
- Two **oral** presentations at the ACS Spring Meeting 2021 (virtual). Presided over the technical session "Physical Organic Chemistry: Calculations, Mechanisms, Photochemistry & High-Energy Species".
- **Invited panelist** for the "8th Future in the Sciences 2021" conference (virtual), Northeastern University.
- Verbanac Travel Award - **poster** presentation at the '21st European Symposium on Organic Chemistry (ESOC)', Vienna, July 2019.
- Seemon Pines Award for 'Best **Oral** Research Presentation' at the 2018 Beak-Pines Allerton Conference, Champaign, Illinois.
- Fuson Travel Award - **poster** at the Solvay Workshop, 'Chiral Symmetry Breaking at the Molecular Level', Brussels, Nov. 2018.