ANUVAB DAS

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PROFESSIONAL APPOINTMENTS

Nanyang Technological University	**Singapore**
Assistant Professor, School of Chemistry, Chemical Engineering & Biotechnology	March 2025 – present

EDUCATION

Texas A&M University	**College Station, TX**
Ph.D. Chemistry	Dec 2020
Indian Institute of Technology Kharagpur	**Kharagpur, India**
M.Sc. Chemistry	Aug 2015
Presidency College	**Kolkata, India**
B.Sc. (Honors) Chemistry, *minor in Physics and Mathematics*	July 2013

RESEARCH EXPERIENCE

California Institute of Technology	**Pasadena, CA**
Postdoctoral Research Scholar with Prof. Frances H. Arnold *Discovery of New Amination Reagents & Reactions using Protein Engineering*	Jan 2021 – June 2024
Texas A&M University	**College Station, TX**
Graduate Research with Prof. David C. Powers *Crystallographic Characterization of Transient C–H Amination Intermediates*	Oct 2015 – Dec 2020
Indian Institute of Technology Kharagpur	**Kharagpur, India**
Masters Research with Prof. Jayanta K. Ray *Pd-Catalyzed Annulation of Internal Alkynes for the Synthesis of Fulvene and Indene Derivatives*	May 2014 – May 2015
Indian Association for the Cultivation of Science	**Kolkata, India**
Undergraduate Research with Prof. Abhishek Dey *Absorption and Electrochemical Investigation of N-donor Ligand Binding to Zn-porphyrins in Non-Aqueous Media*	May 2013 – July 2013

AWARDS & HONORS

Mentored Work	
Reaxys PhD Prize	2020
70th Lindau Nobel Laureate Meeting	2020
Dr. Judith Edmiston Mentoring Award	2020
Martin Donald Corera Memorial Endowed Fund	2019
Merit-cum-Means Scholarship	2014

PUBLICATIONS

Mentored Work († = equal contribution; undergraduate co-author)

23. Kennemur, J. L.; Long, Y.; Ko, C. J.; **Das, A.**; Arnold, F. H. Enzymatic Stereodivergent Synthesis of Azaspiro[2.y]alkanes. (*submitted*)
22. **Das, A.**;† Gao, S.;† Lal, R. G.; Hicks, M. H.; Oyala, P. H.; Arnold, F. H. Reaction Discovery Using Spectroscopic Insights from an Enzymatic C–H Amination Intermediate. *J. Am. Chem. Soc.* **2024**, *146*, 20556–20562. DOI: 10.1021/jacs.4c05761.
21. Mao, R.; Gao, S.; Qin, Z.-Y.; Rogge, T.; Wu, S. J.; Li, Z.-Q.; **Das, A.**; Houk, K. N.; Arnold, F. H. Biocatalytic, Enantioenriched Primary Amination of Tertiary C–H Bonds. *Nat. Catal.* **2024**, *7*, 585–592. DOI: 10.1038/s41929-024-01149-w.
20. Wackelin, D. J.; Mao, R.; Sicinski, K. M.; Zhao, Y.; **Das, A.**; Chen, K.; Arnold, F. H. Enzymatic Assembly of Diverse Lactone Structures: An Intramolecular C–H Functionalization Strategy. *J. Am. Chem. Soc.* **2024**, *146*, 1580–1587. DOI: 10.1021/jacs.3c11722.
19. **Das, A.**;† Long, Y.;† Maar, R. R.; Roberts, J. M.; Arnold, F. H. Expanding Biocatalysis for Organosilane Functionalization: Enantioselective Nitrene Transfer to Benzylic Si–C–H Bonds. *ACS Catal.* **2024**, *14*, 148–152. DOI: 10.1021/acscatal.3c05370. (ACS Editor's Choice)
18. **Das, A.**; Gao, S.; Athavale, S. V.; Alfonzo, E.; Long, Y.; Arnold, F. H. Directed Evolution of P411 Enzymes for Amination of Inert C–H Bonds. *Methods Enzymol.* **2023**, *693*, 1–30. DOI: 10.1016/bs.mie.2023.09.009.
17. Gao, S.; **Das, A.**; Alfonzo, E.; Sicinski, K. M.; Rieger, D.; Arnold, F. H. Enzymatic Nitrogen Incorporation Using Hydroxylamine. *J. Am. Chem. Soc.* **2023**, *145*, 20196–20201. DOI: 10.1021/jacs.3c08053.
16. Paikar, A.; Van Trieste III, G. P.; **Das, A.**; Wang, C.-W.; Sill, T. E.; Bhuvanesh, N.; Powers, D. C. Development of Non-Classical Photoprecursors for Rh_2 Nitrenes. *Inorg. Chem.* **2023**, *62*, 12557–12564. DOI: 10.1021/acs.inorgchem.3c01820.
15. Mao, R.; Wackelin, D. J.; Jamieson, C. S.; Rogge, T.; Gao, S.; **Das, A.**; Taylor, D. M.; Houk, K. N.; Arnold, F. H. Enantio- and Diastereoenriched Enzymatic Synthesis of 1,2,3-Polysubstituted Cyclopropanes from (Z/E)-Trisubstituted Enol Acetates. *J. Am. Chem. Soc.* **2023**, *145*, 16176–16185. DOI: 10.1021/jacs.3c04870.
14. Schaus, L.;† **Das, A.**;† Knight, A. M.; Jimenez-Osés, G.; Houk, K. N.; Garcia-Borràs, M.; Arnold, F. H.; Huang, X. Protoglobin-catalyzed formation of *cis*-trifluoromethyl-substituted cyclopropanes via carbene transfer. *Angew. Chem. Int. Ed.* **2023**, *62*, e202208936. DOI: 10.1002/anie.202208936.
13. Athavale, S. V.;† Gao, S.;† **Das, A.**;† Mallojjala, S. C.; Alfonzo, E.; Long, Y.; Hirschi, J. S.; Arnold, F. H. Enzymatic Nitrogen Insertion into Unactivated C–H Bonds. *J. Am. Chem. Soc.* **2022**, *144*, 19097–19105. DOI: 10.1021/jacs.2c08285. (**Perspective** by Derek Lowe 'Zapping In Amine Groups' in Science magazine. **Highlight** in *Synfacts* **2023**, *19*, 81.)
12. Alfonzo, E.; **Das, A.**; Arnold, F. H. New Additions to the Arsenal of Biocatalysts for Non-canonical Amino Acid Synthesis. *Curr. Opin. Green Sustain. Chem.* **2022**, *38*, 100701. DOI: 10.1016/j.cogsc.2022.100701.
11. Van Trieste III, G. P.; Reid, K. A.; Hicks, M. H.; **Das, A.**; Figgins, M. T.; Bhuvanesh, N.; Ozarowski, A.; Telser, J.; Powers, D. C. Nitrene Photochemistry of Manganese *N*-Haloamides. *Angew. Chem. Int. Ed.* **2021**, *60*, 26647–26655. DOI: 10.1002/anie.202108304.
10. Dau, H.; Keyes, A.; Basbug Alhan, H. E.; Ordonez, E.; Tsogtgerel, E.; Gies, A. P.; Auyeung, E.; Zhou, Z.; Maity, A.; **Das, A.**; Powers, D. C.; Beezer, D. B.; Harth, E. Dual Polymerization Pathway for Polyolefin-Polar Block Copolymer Synthesis via MILRad: Mechanism and Scope. *J. Am. Chem. Soc.* **2020**, *142*, 21469–21483. DOI: 10.1021/jacs.0c10588.

9. **Das, A.**; Wang, C.-H.; Van Trieste III, G. P.; Sun, C.-J.; Chen, Y.-S.; Reibenspies, J. H.; Powers, D. C. *In Crystallo* Snapshots of Rh_2 Catalyzed C–H Amination. *J. Am. Chem. Soc.* **2020**, *142*, 19862–19867. DOI: 10.1021/jacs.0c09842. (**Highlight** in *Nat. Rev. Chem.* **2021**, *5*, 2.)
8. Baek, Y.; **Das, A.**; Zheng, S.-L.; Reibenspies, J. H.; Powers, D. C.; Betley, T. A. C–H Amination Mediated by Cobalt Organoazide Adducts and the Corresponding Cobalt Nitrenoid Intermediates. *J. Am. Chem. Soc.* **2020**, *142*, 11232–11243. DOI: 10.1021/jacs.0c04252.
7. Hyun, S.-M.; Upadhyay, A.; **Das, A.**; Burns, C. P.; Sung, S.; Beaty, J. D.; Bhuvanesh, N.; Nippe, M.; Powers, D. C. Kinetic versus Thermodynamic Metalation enables Synthesis of Isostructural Homo- and Heterometallic Trinuclear Clusters. *Chem. Commun.* **2020**, *56*, 5893–5896. DOI: 10.1039/D0CC02346A.
6. **Das, A.**; Van Trieste III, G. P.; Powers, D. C. Crystallography of Reactive Intermediates. *Comment Inorg. Chem.* **2020**, *40*, 116–158. DOI: 10.1080/02603594.2020.1747054.
5. **Das, A.**; Chen, Y.-S.; Reibenspies, J. H.; Powers, D. C. Characterization of a Reactive Rh_2 Nitrenoid by Crystalline Matrix Isolation. *J. Am. Chem. Soc.* **2019**, *141*, 16232–16236. DOI: 10.1021/jacs.9b09064.
4. **Das, A.**; Maher, A. G.; Telser, J.; Powers, D. C. Observation of a Photogenerated Rh_2 Nitrenoid Intermediate in C–H Amination. *J. Am. Chem. Soc.* **2018**, *140*, 10412–10415. DOI: 10.1021/jacs.8b05599.
3. Wang, C.-H.; **Das, A.**; Gao, W.-Y.; Powers, D. C. Probing Substrate Diffusion in Interstitial MOF Chemistry with Kinetic Isotope Effects. *Angew. Chem. Int. Ed.* **2018**, *57*, 3676–3681. DOI: 10.1002/anie.201713244.
2. **Das, A.**; Reibenspies, J. H.; Chen, Y.-S.; Powers, D. C. Direct Characterization of a Reactive Ru_2 Nitride by Photocrystallography. *J. Am. Chem. Soc.* **2017**, *139*, 2912–2915. DOI: 10.1021/jacs.6b13357.
1. Dhara S.; Singha R.; Ghosh M.; Ahmed A.; Nuree Y.; **Das A.**; Ray J. K. Pd-free Sonogashira coupling: one pot synthesis of phthalide *via* domino Sonogashira coupling and 5-*exo-dig* cyclization. *RSC Adv.* **2014**, *4*, 42604–42607. DOI: 10.1039/C4RA07639G.

RESEARCH PRESENTATIONS

Mentored Work

Gordon Research Conference: Enzymes, Coenzymes and Metabolic Pathways, Waterville Valley, NH	July 2023
Gordon Research Conference: Biocatalysis, Manchester, NH	July 2022
Tata Institute of Fundamental Research: Future of Chemistry Symposium (Virtual), Mumbai, India	August 2021
70th Lindau Nobel Laureate Meeting (Virtual), Lindau, Germany	June 2020
3rd Symposium of Metal–Carbene Consortium, San Antonio, TX	February 2020
Gordon Research Conference: Inorganic Reaction Mechanisms, Galveston, TX	March 2019
Dow Symposium, College Station, TX	May 2018
F. A. Cotton Symposium, College Station, TX	March 2017
A. E. Martell Symposium, College Station, TX	October 2016

SERVICE

Mentored Work

Industry Liaison, Organization for Cultural Diversity in Chemistry	Aug 2019 – Aug 2020
Chemistry Senator, Graduate and Professional Student Government	Aug 2018 – Aug 2019
International Liaison, Graduate Student Association of Chemistry	Aug 2018 – Aug 2019
Inorganic Division Safety Officer, Chemistry Student Safety Committee	Aug 2018 – Aug 2019

Member, American Chemical Society Dec 2017 – Present

TEACHING EXPERIENCE

Mentored Work

Graduate Teaching Assistant, Texas A&M University Sept 2015 – April 2020
Courses Taught: General Chemistry Laboratory (CHEM 112)
Organic Chemistry Laboratory (CHEM 237 and 238)
Advanced Inorganic Laboratory (CHEM 433)

MENTORING EXPERIENCE

Mentored Work

Texas A&M University

Undergraduate Students:
Brianna Lilly (at PepsiCo)
Ryan D. Wise (graduate student at University of Florida)
Madeline H. Hicks (graduate student at California Institute of Technology)
Ryan J. Burk (graduate student at University of Texas at Arlington)

Graduate Student:
Dr. Gerard P. V. Trieste III (at Intel)

California Institute of Technology

Graduate Students:
Dr. Shilong Gao (at Moderna)
Yueming Long (graduate student)