Statement of Research Achievements, if any, on which any Award has already been Received by the Applicant. Please also upload brief citations on the research works for which the applicant has already received the awards (Max: 1 MB)

BS research is dedicated to bridging the gap between fundamental science and practical applications, with a focus on how advancements in catalytic processes can significantly enhance pharmaceutical development and organic synthesis. Since beginning my independent career at IIT Kanpur in October 2013, I have concentrated on developing novel metal complexes from first-row late-transition metals, including Ni(II) and high-valent Co(III), for catalytic applications. My group has made notable strides in C–H bond functionalization using these air- and moisture-stable catalysts, an area that was relatively unexplored for high-valent cobalt until our research commenced.

Our pioneering work in this domain includes the development of advanced catalytic techniques for drug synthesis and material science, such as asymmetric dehydrogenation of oxidized hydrocarbons and CO_2 activation. These methods have broad implications for pharmaceuticals, offering new ways to create complex molecules and enhance the efficiency of chemical transformations. Furthermore, his key contributions in late-stage functionalization got attention in pharma industry including his recent developments on converting 2D aromatic compounds into three dimensional molecules through catalytic asymmetric dearomatization. Additionally, we have explored polymer hydrogenolysis for converting waste into valuable chemicals and applied organometallic approaches to biomedical research and small molecule screening.

As I look to the future, my aim is to further advance the application-oriented aspects of my research, transforming fundamental breakthroughs into practical solutions for the pharmaceutical and chemical industries. Despite the progress in basic research, there remains a significant opportunity to focus on application-oriented research within our country. By bridging this gap, I hope to make meaningful contributions that address real-world pharmaceutical challenges and advance both scientific understanding and practical applications.

My commitment is to continue integrating cutting-edge research with practical needs, driving innovation in drug development and organic synthesis, and ultimately making a significant impact on the pharmaceutical and chemical industries.

I have published 81 papers (81 published, 3 under minor revision) and 4 patents (2009-2023) in peer-reviewed leading international journals. these articles are cited more than >4758 times with H-index of 38.

The following awards/recognitions was received against work carried out in my independent work:

- *Selected for the CRSI bronze medal **2023***
- *Invited to join as Fellow of the Royal Society of Chemistry (FRSC) **2022***

- *Selected as one of the Top 5 finalists for the Swarnajayanti fellowship **2020***
- *Winner of the Merck Young Scientist Award **2019***
- *Selected as one of the Top 3 finalists for the Scopus Young Scientist award **2019***
- *Invited to join as international advisory board member for the open access Journal INEOS **2019***
- *Invited to serve as an Associate Editor of Journal of Heterocyclic Chemistry **2019***
- *Invited to serve as Early Career Advisory Board Member for "ACS Catalysis" **2018-19***
- *Recipient of the "P. K. Kelkar Young Faculty Research Award **2017**" from IITK, Kanpur, India.*
- *Recipient of the "DAE Young Scientist Research Award **2014**" from BRNS.*
- *Awarded the ''Thieme Chemistry Journal Award **2014**''for most promising researchers in the worldwide.*

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