

GEORGE R. PACK GRADUATE STUDENT AWARDS CEREMONY

May 22, 2023

PRE-AWARDS RECEPTION (2:45 PM in Chemistry 1st Floor Lobby)
GRADUATE STUDENT AWARDS CEREMONY (3:30 PM in CBL-16)
GEORGE R. PACK AWARD SEMINAR (4:00 PM in CBL-16)

Dr. Tharique Ansari Nalakath – 2022 George Pack Award Recipient
and Speaker

***Palladium Catalysis in Aqueous Micelles: It's Still Sustainable and
Greener than Earth-Abundant Metal Catalysis***

Synthesis and structural diversification of organic molecules are pivotal for humans, as reflected by their impact on medicines, materials, agriculture, energy storage, and electronics. Over the last decades, serious concerns have been raised at the existing unsustainable synthetic practices, which could endanger the well-being of our planet. A closer look into these issues revealed a vast contribution of non-renewable toxic organic solvents—especially their exposure and disposal. For developing alternative solutions, the potential of water as a renewable reaction medium for aqueous micellar catalysis has been unveiled. Recently, this area of research has received substantial attention from major pharmaceutical industries. It has shown tremendous potential by improving multiple economic and environmental parameters associated with chemical processes. This talk entirely covers our significant contributions to the field involving the custom-designed chiral amphiphile PS-750-M—a benign, inexpensive, and sustainable reaction medium. The final part of this talk covers the ongoing work at MilliporeSigma for rational design and scalable synthesis of novel ligands and pre-catalysts for challenging C-C and C-N cross-coupling reactions under mild conditions.



Tharique Ansari Nalakath received Ph.D. from the University of Louisville. He worked under the supervision of Prof. Sachin Handa, developing novel sustainable catalytic technologies based on micellar catalysis, which are relevant to pharmaceutical and chemical industries. During his graduate studies, he published over 15 papers and was actively involved in various collaborative projects with pharmaceutical industries, including TAKEDA, Novartis, Biohaven, and Abbvie. He graduated in May 2022 and subsequently joined the research and development unit of Milliporesigma. He is currently involved in developing new sustainable chemistry solutions for the chemical synthesis portfolio. His research interests include micellar catalysis, transition-metal catalyzed cross-coupling reactions, and new pre-catalyst/ligand design. He has been recognized for his contributions with several awards, such as the Chemistry R&D Award for Extraordinary Efforts by Merck KGaA Darmstadt, Germany (Q2/2023, One Chemistry R&D, SLS), the Ciba Travel Award in Green Chemistry (2022) from ACS Green Chemistry Institute, and the Arno Spatola Endowment Graduate Research Fellowship from IMD3 (2019).