Innovation and Global Cooperation for Sustainability

12-14 March, 2024

Chemical Innovations For Sustainable Future

Under Indo-German Higher Education Partnerships (IGP-2020)
Tenure: 2020-2024, Grant no. No.F -1-7/2020(IC)
Name of PI: **Dr. Debayan Sarkar**, Associate Professor, IIT Indore

Biswajit Das[a], Sangita Bishi[b], Dr. Debayan Sarkar*[,a]

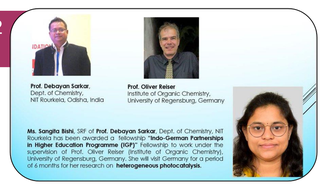
[a]Department of Chemistry, Indian Institute of Technology Indore, Madhya Pradesh 453552, India; orcid.org/0000-0003-2221-2912; E-mail: sarkard@iiti.ac.in
[a]Department of Chemistry, National Institute of Technology Rourkela, Odisha, 769008, India

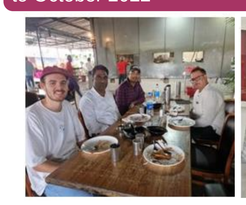
1. Activities Completed:

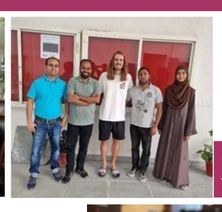
On 26th Oct 2020 first meeting was held to start the DAAD and UGC sponsored project entitled as "**Chemical Innovation for Sustainable Future**" between Department of Chemistry, NIT Rourkela and Department of Chemistry and Pharmacy, Regensburg University.

On 16th Nov 2021, a virtual symposium was carried out with two scientific lectures and four student presentations.

One Ph. D. Student from NIT Rourkela visited University of Regensburg from April 2022 to October 2022







One masters student from University of Regensburg visited IIT Indore from September 2022 to October 2022.

An international conference entitled "**Sustainable Chemistry 2023**" was conducted under the Indo-German project from 22nd – 23rd February 2023 at Department of Chemistry, IIT Indore. 20 reputed Indian Speakers along with 8 German Speakers , 1 Japanese and 1 France speaker were invited in the conference and was attended by 80 students across the country, who were sensitized about the UGC funded IGP Programme

3 faculties of IIT Indore have visited University of Regensburg in July 2023 and one Ph. D. student from University of Regensburg visited IIT Indore in November 2023.

2. Present-year Activities:

An international conference entitled "**Sustainable Chemistry-II, 2024**" was conducted under the Indo-German project from 20th – 22nd February 2024 at Kenilworth Resort, Goa. In the conference, there was 32 invited lectures by reputed professors and 5 flash presentation along with 22 poster presentation by the students across the globe. The best presentation awards were sponsored by ACS and Wiley.

One faculty from IIT Indore is visiting to the University of Regensburg for 3 months.

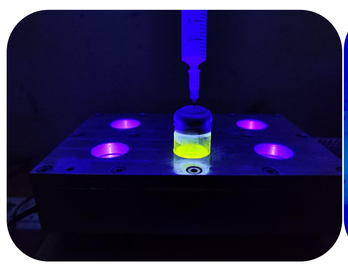
One Post-Doc student (Dr. Majid Ahmad Ganie) from IIT Indore is visiting to the University of Regensburg for 1 year.

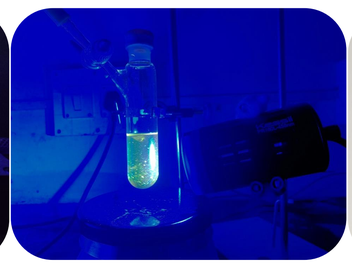
One Ph. D. student from IIT Indore is visiting to the University of Regensburg for 3 months.

3. Research Activities:

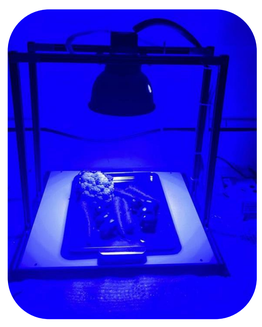
Exploration of Visible Light Catalysis

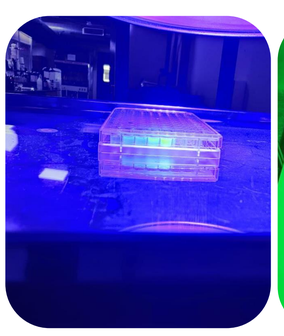
Visible Light Set-up for Chemical Reactions



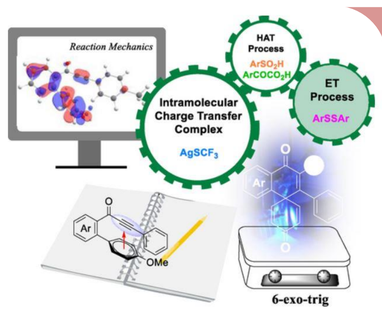


Visible Light Set-up for Photo Dynamic Inactivation of Microbes

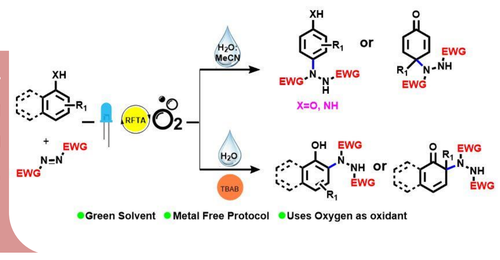




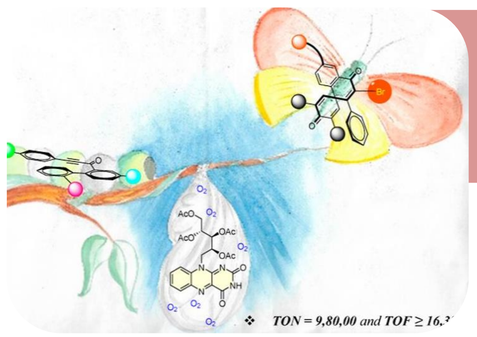
Recent Publications



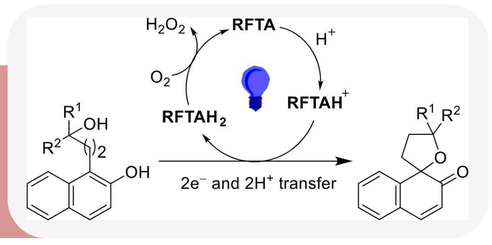
Visible-light Catalysed Trifluoromethylthiolation and Related Dearomative Spirocyclizations Barnali Roy, Puspendu Kuila, and Debayan Sarkar* *Adv. Synth. Catal.* 2024 (DOI:https://doi.org/10.1002/adsc.202301208, Early view)



Sustainable Organic Photocatalysis for Site-Selective Hydrazo-Coupling of Electron Rich Arenes. Biswajit Das, Sushree Ranjan Sahoo, Amitabha Das, Biswarup Pathak*, and Debayan Sarkar* *Org. Lett.* **2023**, *25*, *42*, 7733–7738.

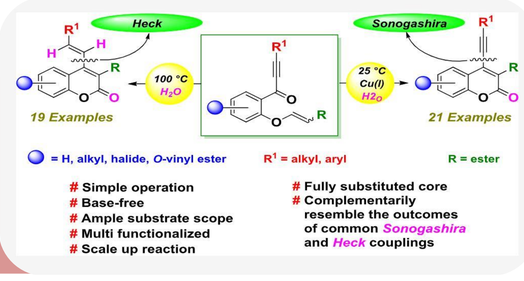


Visible Light Promoted Brominative Dearomatization of Biaryl Ynones to Spirocycles. Barnali Roy, Puspendu Kuila, and Debayan Sarkar*, *J. Org. Chem.* **2023**, *88*, 15, 10925-10945



Riboflavin Photocatalyzed Dearomative Spiro-Etherification of Naphthols, Nabakumar Bera, Bhabani Sankar Lenka, Burkhard König*, and Debayan Sarkar*, *J. Org. Chem.* **2023**, *88*, 13, 7977–7987.

Photoredox Catalyzed Thiocyanative Cyclization of Biaryl Ynones to Thiocyanated Spiro[5.5]trienones: An External Oxidant and Transition-Metal Free Approach. Shantanu Samanta, Debayan Sarkar* *ChemPhotoChem*, **2023**, *7*, 6, e202200335.



Temperature-Controlled Chemoselective Synthesis of Multisubstituted 4-Alkynyl/trans 4-Alkenyl Coumarins, Sushree Ranjan Sahoo, Biswajit Das, Debayan Sarkar*,Hans Reuter, J. Org. Chem. 2022, 87, 21, 13529–13541