Chemical Innovations For Sustainable Future

Innovation and Global Cooperation for Sustainability
12-14 March, 2024

Under Indo-German Higher Education Partnerships (IGP-2020)

Tenure: 2020-2024, Grant no. No.F -1-7/2020(IC)

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DAAD

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1. Past Activities

- One Ph.D. student (April 2022-Oct-2022) at University of Regensburg
- One M.Sc. student from University of Regensburg to IIT Indore (September 2022-October 2022)
- Conference " IGP-Sustainable Chemistry-I 2023" (22-23rd Feb 2023)
- One Ph.D. student from Univ. of Regensburg, Germany to IIT Indore.
- 3 Faculties visit from IIT Indore to Univ. of Regensburg, Germany.

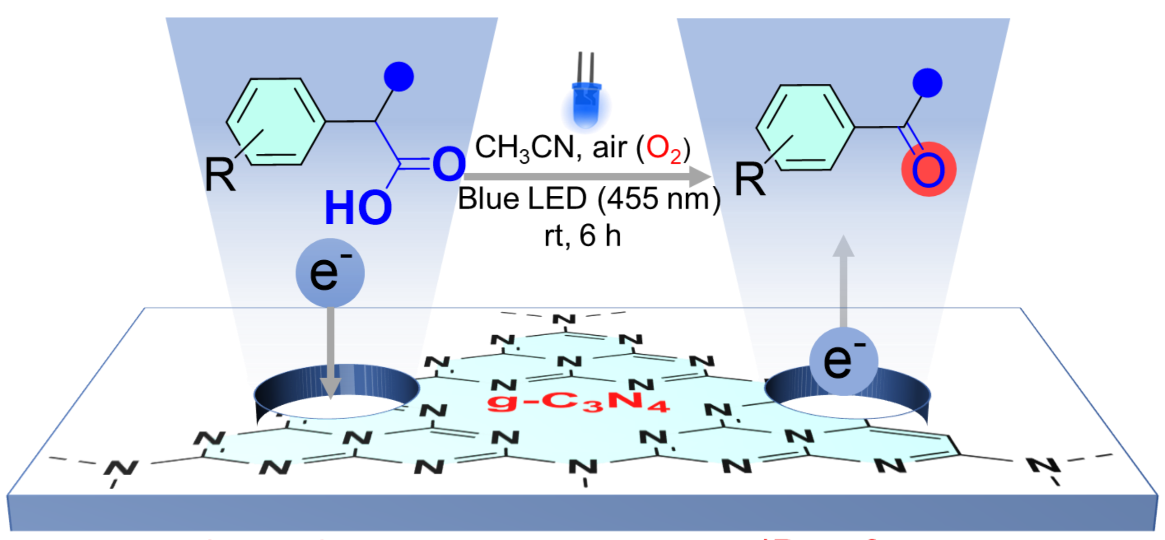
20 reputed Indian Speakers along with 8 German Speakers , 1 Japanese and 1 France speaker were invited in the conference and was attended by 80 students across the country, who were sensitized about the UGC funded IGP Programme

2. Present Year Activities

- Conference on IGP-Sustainable Chemistry-II 2024 (Feb 20-22, 2024)
- One Ph.D. student from IIT Indore to Univ. of Regensburg, Germany
- One Postdoc. from India to Univ. of Regensburg, Germany (1 year)
- One faculty from India to Univ. of Regensburg, Germany

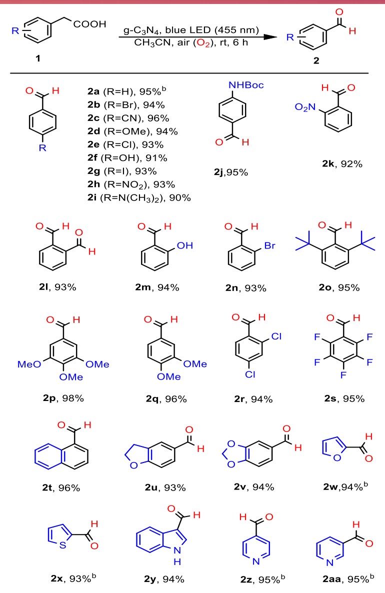
3. Research Activities during Visit to University of Regensburg

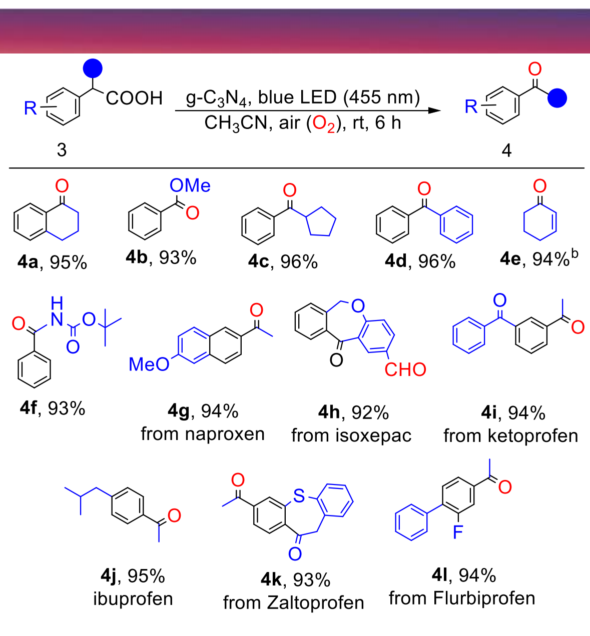
1. g-C_3N_4 Catalysed Decarboxylative Photo-oxygenation of Carboxylic Acids



*Metal free
*Recyclable photocatalyst
*Less reaction time

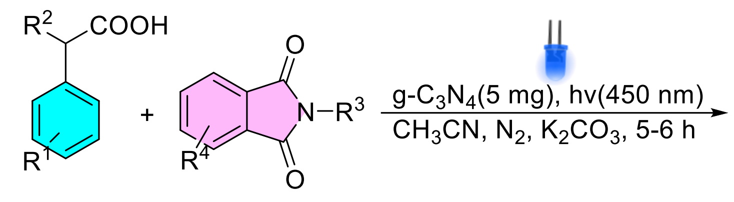
*Base free
*Excellent Yield- 90-98%
*High functional group tolerance



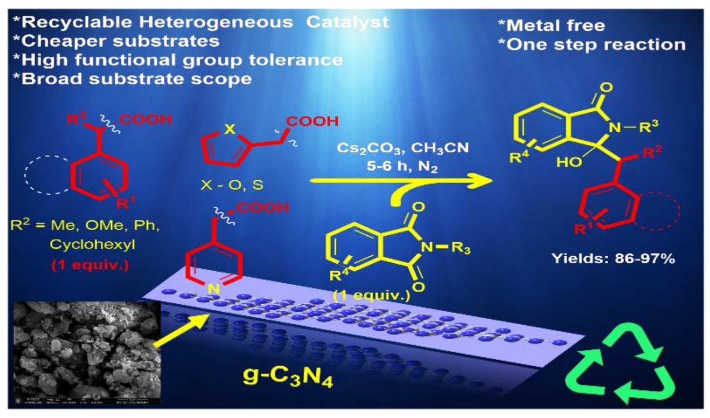


4. Research Activities 2

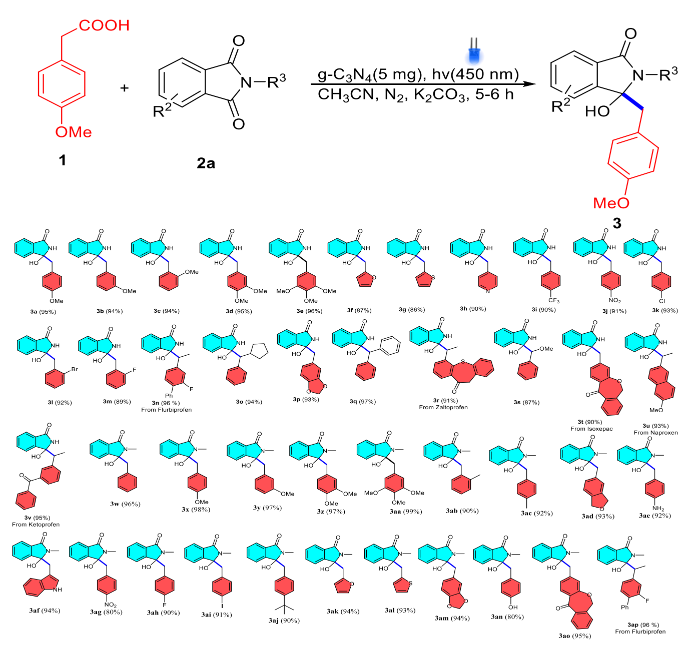
g-C_3N_4 Mediated Photo-decarboxylative Benzylation of Phthalimide Derivatives



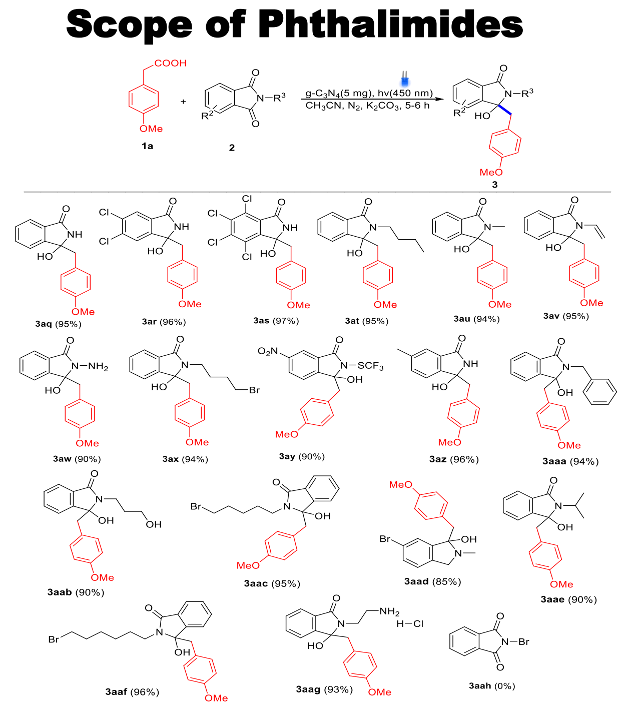
Yields: 86-97%



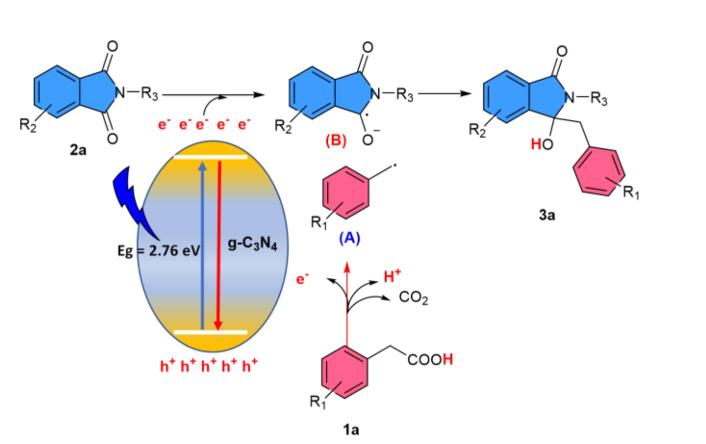
Scope of Aryl Acetic acids



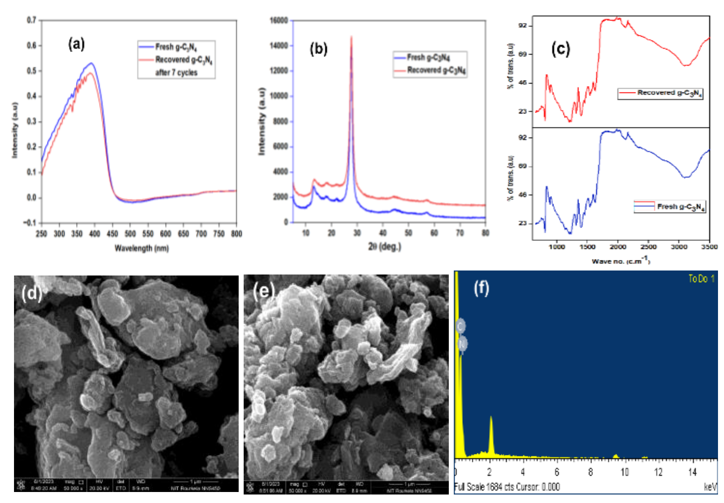
Scope of Phthalimides



Proposed Reaction Mechanism



Catalyst Recyclability



5. Conclusion

- Successful research collaboration with university of Regensburg, Germany.
- Student and faculty exchange program.
- Conference and symposia to strengthen research collaboration.
- Number of research papers have been published under the IGP funded project.

References:

- we have developed an entirely metal-free heterogeneous photocatalytic system for the aerobic oxidation of structurally diverse sp³ (C–H) bonds with O_2 as the green oxidant.
- we have developed the arylation of phthalimide triggered by the visible light and g-C_3N_4 as a heterogeneous photocatalyst.