

Research Profile

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Academic Background:

- **M.Sc.** (2000): Chemistry, from the Department of Chemistry, University of Pune
- **Ph.D.** (2006): National Chemical Laboratory (NCL), Pune
- **Post-Doctoral Fellowship** (2006-2008): University of Bologna, Italy

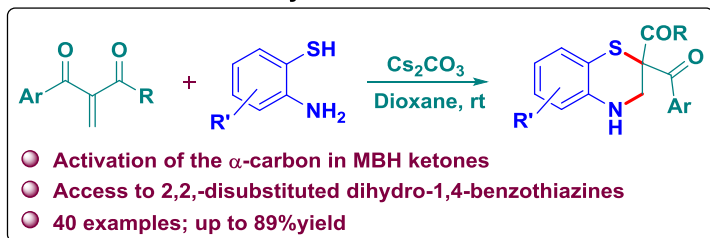
Broad Research Interests: Organocatalysis, Sustainable Chemistry, Synthetic Methodologies

- ⇒ Development of proline-based organocatalysts for asymmetric C-C bond forming transformations
- ⇒ Bifunctional organocatalysis – enantioselective cascade cyclisations for the construction of fused and bridged ring systems
- ⇒ Sustainable synthetic methodologies related to Baylis-Hillman reaction, Michael addition, etc.

Recent Research Highlights

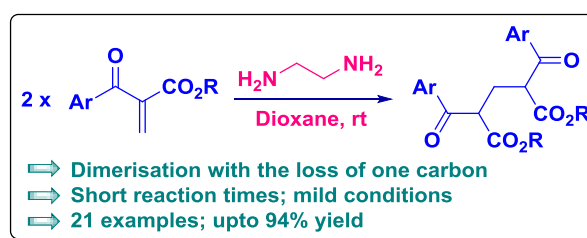
➤ Novel transformations of “Morita-Baylis-Hillman ketones”

Oxidative annulation of MBH ketones to access dihydrobenzothiazines



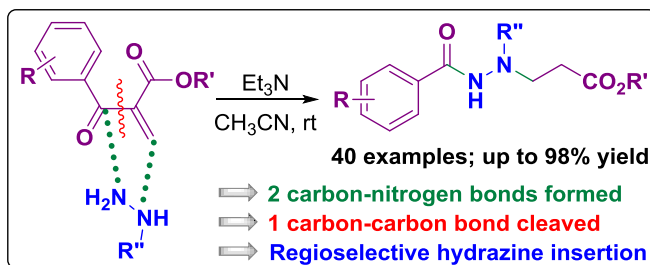
J. Org. Chem. 2022, 87, 5760

Diamine mediated degradative dimerization of MBH ketones



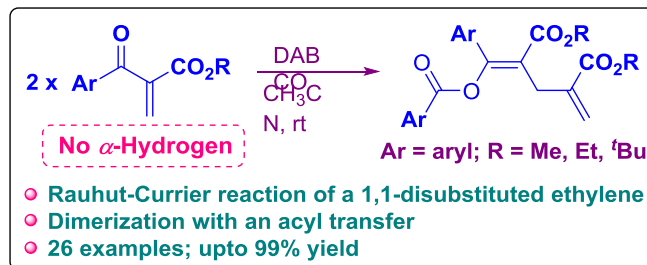
Chem. Commun. 2020, 56, 2949

Access to benzohydrazides via a unique hydrazine insertion



Org. Lett. 2019, 21, 8191

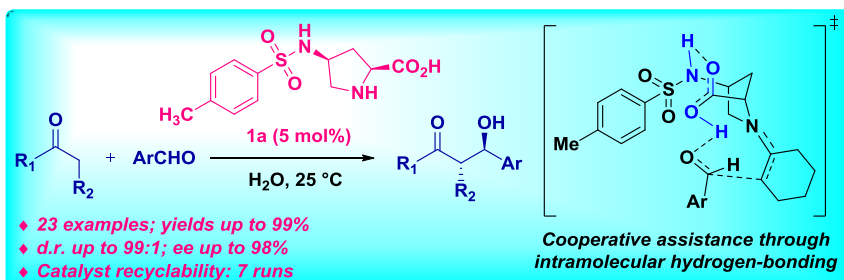
Acyl-transfer driven Rauhut-Currier dimerization of MBH ketones



J. Org. Chem. 2023, 88, 2023

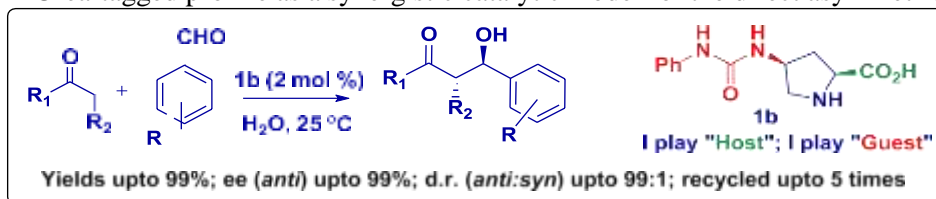
➤ Asymmetric Organocatalysis

- A sulfonamide-tagged proline as a bifunctional cooperative catalyst for the asymmetric aldol addition



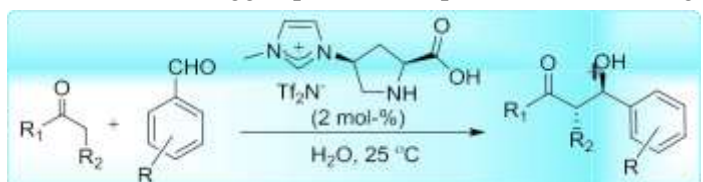
New J. Chem. 2023, 47, 17042

- A Urea-tagged proline as a synergistic catalytic model for the direct asymmetric aldol reaction



J. Org. Chem. 2018, 83, 8225

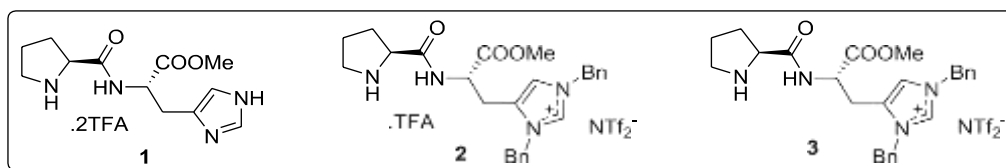
- An Imidazolium-tagged proline to explore effect of ion-tag proximity to the reaction site



Yields up to 99%; ee (*anti*) up to 99%; d.r. (*anti:syn*) up to 99:1

Eur. J. Org. Chem. 2017, 1788

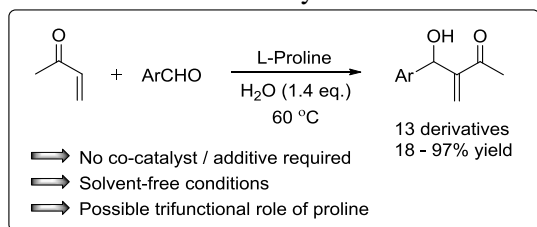
- Dipeptide based catalysts (*Pro-His* and *Pro-Arg* derived catalysts)



SYNTHESIS 2021, 2702

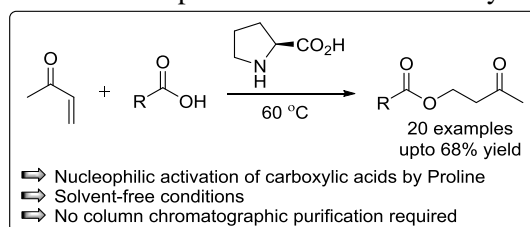
➤ Methodologies based on harnessing the synthetic potential of methyl vinyl ketone

Proline mediated Baylis-Hillman reaction



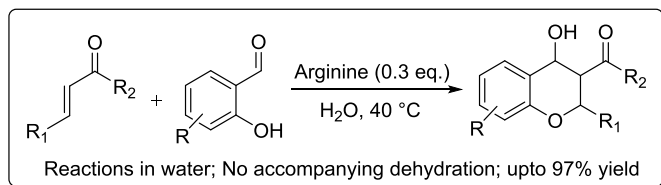
Synlett 2017, 28, 128

Nucleophilic activation of carboxylic acids



Synlett 2017, 28, 1477

An Expedient Access to Chromanols via an Arginine-mediated Cascade Cyclisation in Water



Tetrahedron Lett. **2018**, *59*, 2356

GRANTS & RESEARCH FUNDING

- Research Grants received from DST, CSIR, SERB and UGC, India, with a total funding > Rs. 1 crore (Rs. 10 million)
- Two collaborative projects carried out in collaboration with **RFBR, Russia** (with Prof. Sergei Zlotin, Zelinsky Institute of Organic Chemistry, Moscow) and **Academy of Finland** (with Prof. Petri Pihko, University of Jyväskylä, Finland)

Significant publications (recent)

- Cooperative assistance of a sulfonamide in a proline-mediated direct asymmetric aldol addition; K. Kumari, M. Bhati, R. S. Madhukar, A. G. H. Khan, P. Janjani, S. R. Reddy and **S. Easwar***, *New J. Chem.* **2023**, *47*, 17042-17050 <https://doi.org/10.1039/D3NJ02685J>
- Acyl Transfer Driven Rauhut–Currier Dimerization of Morita–Baylis–Hillman Ketones; R. Kumari, A. K. Jha, S. Goyal, R. Maan, S. R. Reddy and **S. Easwar***, *J. Org. Chem.* **2023**, *88*, 2023-2033. <https://doi.org/10.1021/acs.joc.2c02244>
- Synthesis of 2,2-Disubstituted Dihydro-1,4-benzothiazines from Morita–Baylis–Hillman Ketones by an Oxidative Cyclization
A. K. Jha, R. Kumari and **S. Easwar***, *J. Org. Chem.* **2022**, *87*, 5760-5772; <https://doi.org/10.1021/acs.joc.2c00087>
- Proline-Histidine Dipeptide: A Suitable Template for Generating Ion-tagged Organocatalysts for the Asymmetric Aldol Reaction
H. Inani, A. Singh, M. Bhati, K. Kumari, A. S. Kucherenko, Sergei G. Zlotin* and **S. Easwar***, *Synthesis* **2021**, *53*, 2702-2712. [doi: 10.1055/a-1477-4871](https://doi.org/10.1055/a-1477-4871)
- Diamine-Mediated Degradative Dimerisation of Morita-Baylis-Hillman Ketones
A. K. Jha, A. Kumari and **S. Easwar***, *Chem. Commun.* **2020**, *56*, 2949-2952. <https://doi.org/10.1039/C9CC10068G>
- A Hydrazine Insertion Route to N²-Alkyl Benzohydrazides by an Unexpected Carbon-Carbon Bond Cleavage
A. K. Jha, R. Kumari and **S. Easwar***, *Org. Lett.* **2019**, *21*, 8191-8195. <https://doi.org/10.1021/acs.orglett.9b02657>
- Probing the Synergistic Catalytic Model: A Rationally Designed Urea-Tagged Proline Catalyst for the Direct Asymmetric Aldol Reaction
M. Bhati, K. Kumari and **S. Easwar***, *J. Org. Chem.* **2018**, *83*, 8225-8232. <https://doi.org/10.1021/acs.joc.8b00962>

Invited Lectures (*recent*)

- "Prof. D. K. Banerjee Memorial Lecture" at Indian Institute of Science, Bangalore, **Apr 2023**
- International Conference on "Recent Advances in Chemical Sciences" at Central University of Jammu, **Nov 2022**
- Annual Symposium "*Interactions 2022*", IISER Bhopal, **Mar 2022**
- Invited Expert Lectures in the Workshop on "*Spectroscopic Techniques for Materials Characterization*", MNIT Jaipur, **Jan 2021**
- Invited talk at the Department of Chemistry, University of Bologna, Italy on "*The Morita-Baylis-Hillman Ketone – A Pandora's Box of Reactivity*", **Oct '19**
- Invited talk at the Karolinska Institute, Stockholm, Sweden on "*Asymmetric Organocatalysis and the Morita-Baylis-Hillman Reaction: Diverse Tools towards Biologically Active Targets*", **Sep '19**
- National Conference on "*Emerging Trends in Chemical Sciences*", Central University of Jammu, **Mar '19**
- International Conference on "*Chemical and Biological Sciences in Drug Discovery*", Berhampur University, **Mar '19**