Curriculum Vitae

Dr. Nisar Ahmad Mir

Assistant Professor

Department of Chemistry, Government degree College Pattan

Mobile: +7006743418

Contact: ***meernissar07@gmail.com***

- Seeking quality working environment in an esteemed group/organization so that, I can contribute positively in the field of my specialization.

Educational Background

(2021) Feb to Present: Assistant Professor
Department of Chemistry, Government Degree College Patan, J&K, INDIA.

2020 (April) – (2021) January: Assistant Professor
Department of Chemistry, Government Degree College Boys Anantnag, J&K, INDIA.

2017 (April) – (2020) September: Assistant Professor
Department of Chemistry, Women College Pulwama, J&K, INDIA.

2016 – 2017: Postdoctorate Fellow

Advisor: Prof. Dattatraya. H. Dethe
Indian Institute of Technology Kanpur, INDIA.

2012 – 2016: Ph. D. Organic Chemistry

Advisor: Prof. Indresh Kumar
Birla Institute of Technology and Science Pilani (BITS), INDIA.

Thesis title: ''Organocatalytic Approach Towards the Synthesis of Five Membered Nitrogen Heterocyclic Compounds''

Funded by: "Department of Science and Technology (DST) New Delhi"
"Council of Scientific and Industrial Research (CSIR) New Delhi "

2008 – 2010: M. Sc. (Organic Chemistry)

Panjab University (PU), Chandigarh, Panjab, India (**71%**)

2005 – 2008: B. Sc. (General English, Chemistry, Botany and Zoology)

University of Kashmir (KU), Srinagar, J&K, India (**60%**)

2005: **Class 12th (General English, Chemistry, Physics and Biology)**
JKBOSE, J&K, India (66%)

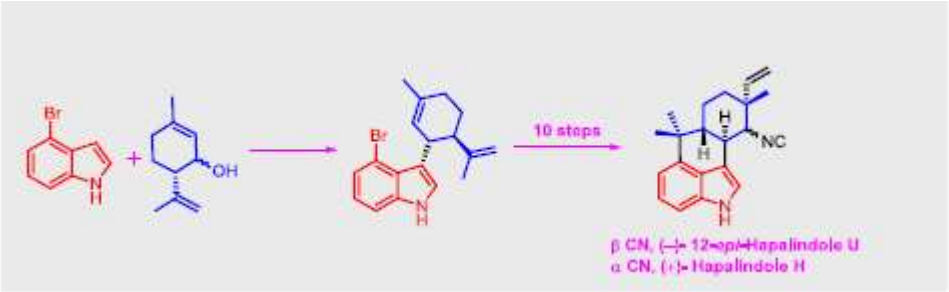
2003: **Class 10th (General English, Mathematics, Science, Social Science, Urdu)**
JKBOSE, J&K, India (73%)

Awards and Fellowships

- **2019**: **Award for Fellowship from Indian National Science Academy (INSA)**, New Delhi, INDIA.
- **2015**: **Award for Senior Research Fellowship (SRF)** of CSIR, New Delhi, INDIA.
- **2012**: **Qualified All INDIA Graduate Aptitude Test for Engineering (GATE)** in Chemical Sciences of MHRD, New Delhi, INDIA.
- **2012: Qualified National Entrance Examination** conducted by Birla Institute of Technology and Science Pilani (BITS), (**2012**), Pilani, Rajasthan, INDIA.
- **2010**: **Qualified State Eligibility Test (SET)** in Chemical Sciences among top four students conducted by Jammu University, Jammu, J&K, INDIA.

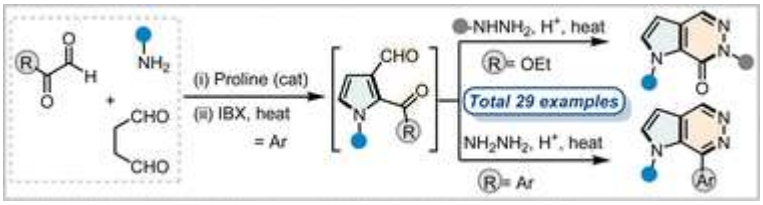
Postdoctoral work

Dattatraya H. Dethe*, Saikat Das, Vijay Kumar B, **Nisar A. Mir**, Enantiospecific total syntheses of (+)-Hapalindole H and (−)-12-epi-Hapalindole U. ***Chemistry a European Journal, 2018, 36, 8980-8984***.

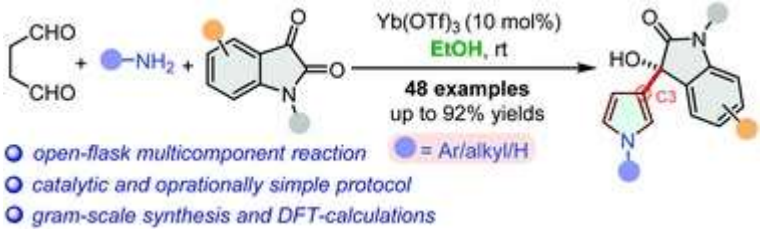


Ph.D Work Publications

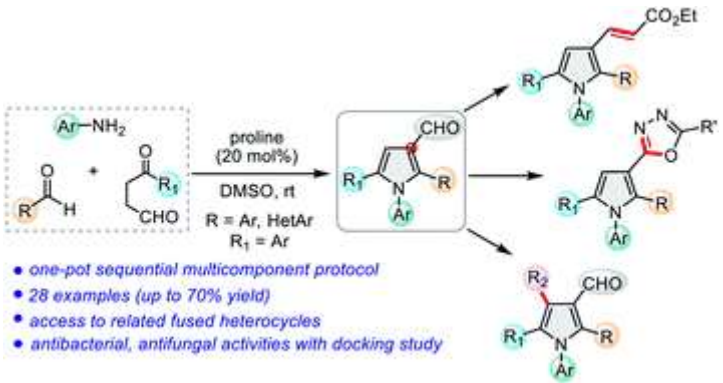
Two-pot sequential multicomponent metal-free synthesis of pyrrolo[2,3-d]pyridazin-7-ones and pyrrolo[2,3-d]pyrizidines, Mamta, **Nisar. Ahmad. Mir**, J. Yadav, A. P. Pawar, R. Sharma, R. Kant, K. Rangan, E. Iype, B. Khungar, Indresh Kumar; *New J. Chem. 2023,47,14637-14645.*



Direct catalytic synthesis of β-(C3)-substituted pyrroles: a complementary addition to the Paal–Knorr reaction; Amol Prakash Pawar, Jyothi Yadav, **Nisar Ahmad Mir**, Eldhose Iype, Krishnan Rangan, Sumati Anthal, Rajni Kant and Indresh Kumar; *Chem. Commun.* **2021, 57, 251-254.**

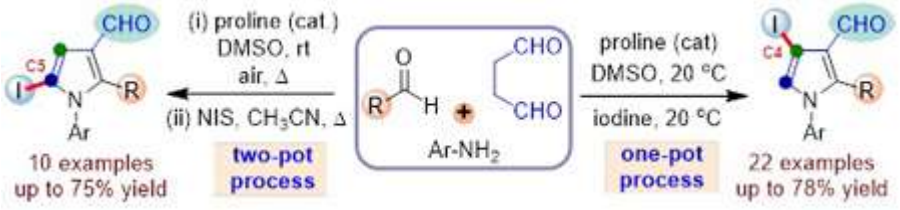


Sequential multicomponent catalytic synthesis of pyrrole-3-carboxaldehydes: Evaluation for antibacterial and antifungal activities along with docking studies; **Nisar A. Mir**, Panduga Ramaraju, Satheeshvarma Vanaparthi, Sachin Choudhary, Rajnish P. Singh, Preetika Sharma, Rajni Kant, Rajpal Singh, Murugesan Sankaranarayanan, and **Indresh Kumar***; ***New J. Chem.* 2020, 44, 16329-16339.**

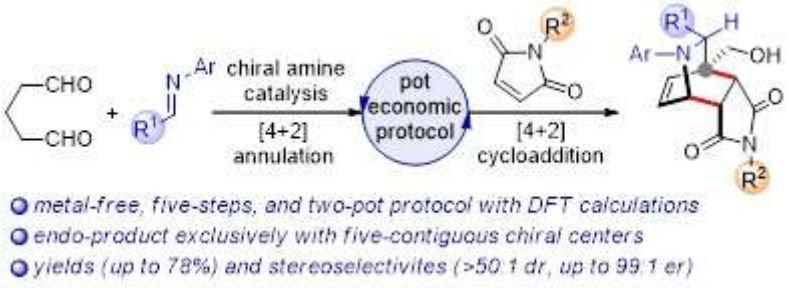


Sequential multicomponent site-selective synthesis of 4-iodo and 5-iodopyrrole-3-carboxaldehydes by tuning the conditions from a common set of starting materials; S. Choudhary, J. Yadav, Mamta, A. P.

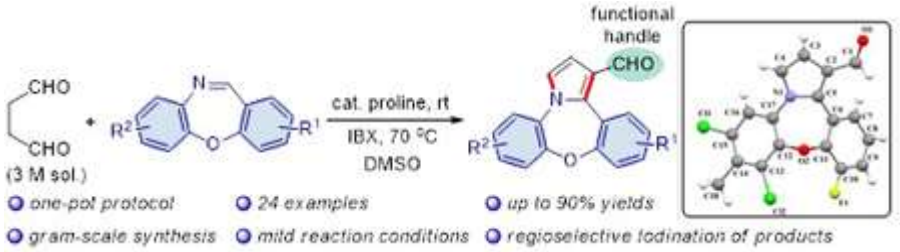
Pawar, S. Vanaparthi, **N. A. Mir**, E. Iype, D. K. Sharma, R. Kant, and **Indresh Kumar***; *Org. Biomol. Chem*., **2020, 18, 1155-1164.**



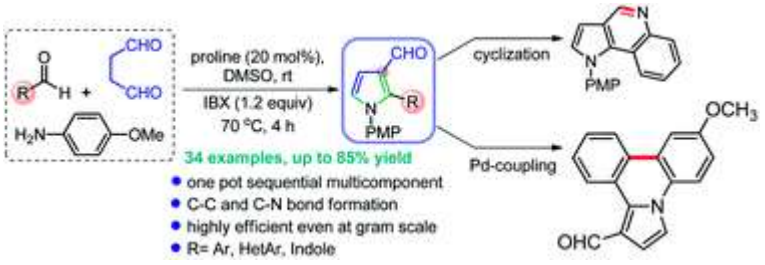
Enantio- and Diastereoselective Two-Pot Synthesis of Isoquinuclidines from Glutaraldehyde and N-Aryl Imines with DFT-Calculations; Panduga Ramaraju, Amol. P. Pawar, E. Iype, **N. A. Mir**, S. Choudhary, D. K. Sharma, R. Kant, **Indresh Kumar***; *J. Org. Chem*., **2019, 84, 12408-12419.**



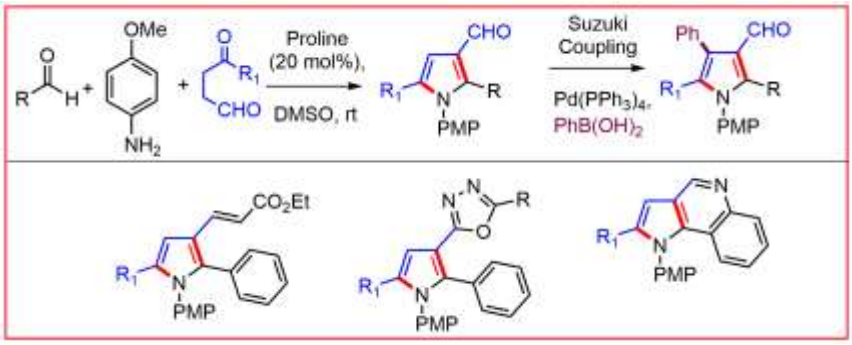
Sachin Choudhary, **Nisar. A. Mir,** Anoop Singh, Devinder Sharma, Jyoti Yadav, Rajani Kant, Indresh Kumar,* A simple entry to tetracyclic oxazepine-fused pyrroles via metal-free [3+2] annulation between dibenzo[b,f][1,4]oxazepines and aqueous succinaldehyde *New J. Chem*., **2019, 43, 953-962.**



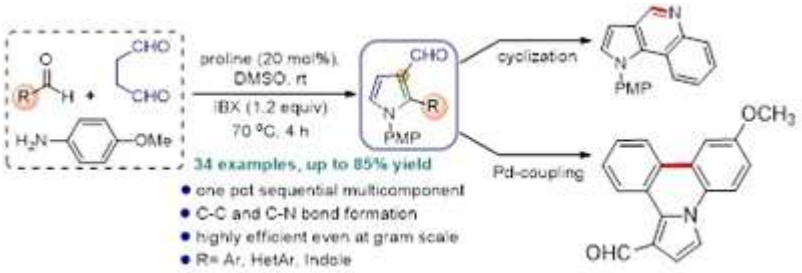
Nisar. A. Mir, Anoop Singh, Sachin Choudhary, Deepika Singh, Preetika Sharma, Rajani Kant, Indresh Kumar,* One-pot sequential multicomponent reaction between *in situ* generated aldimines and succinaldehyde: Facile synthesis of substituted pyrrole-3-carbaldehydes and applications towards medicinally important fused heterocycles**. *RSC. Adv.* 2018,** *8*, 15488-15458



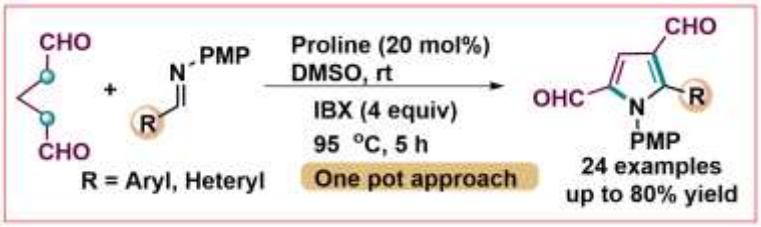
Nisar. A. Mir, Panduga Ramaraju, and Indresh Kumar,* Aminocatalytic one-pot three component [3+2] direct Mannich annulations: Synthesis and biological evaluations of substituted-3-formyl pyrroles and related polycyclic ring systems.(***Manuscript Communicated***)



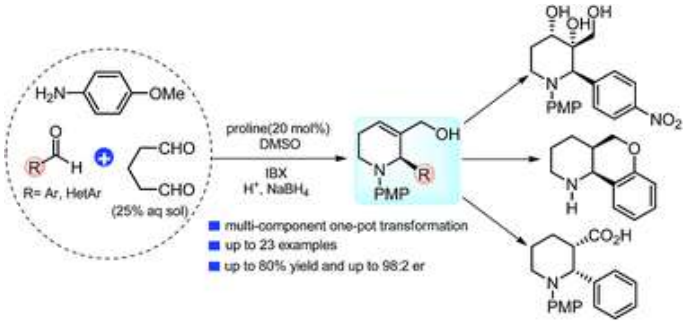
One-pot sequential multicomponent reaction between in situ generated aldimines and succinaldehyde: facile synthesis of substituted pyrrole-3-carbaldehydes and applications towards medicinally important fused heterocycles; **N. A. Mir,** A. Singh, S. Choudhary, D. Singh, P. Sharma, R. Kant and **Indresh Kumar*;** *RSC Adv.*, **2018, 8, 15448-15458.**



P. Ramaraju, **Nisar A. Mir**, D. Singh, Indresh Kumar,* An unprecedented Pseudo-[3+2] Annulation between *N*-(4-Methoxyphenyl) aldimine and Aqueous Glutaraldehyde: Direct Synthesis of Pyrrole-2, 4-dialdehydes. ***European journal of organic Chemistry*, 2017,** *24*, 3461-3465.



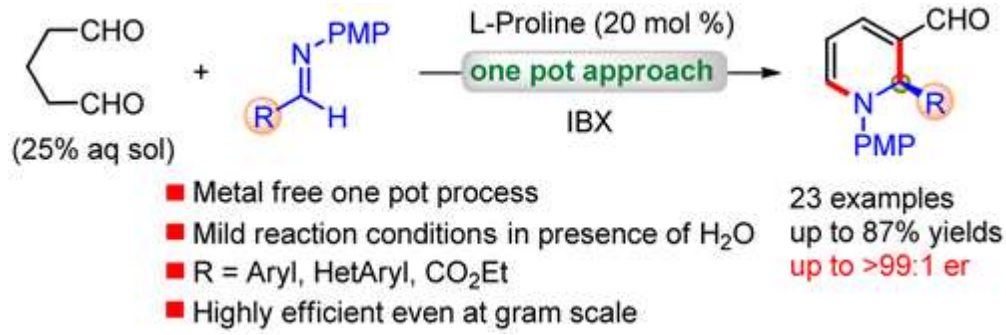
P. Ramaraju, **Nisar. A. Mir**, D. Singh, and Indresh Kumar,* Enantioselective synthesis of 1,2,5,6-tetrahydropyridines (THPs) via proline-catalyzed direct Mannich-cyclization/domino oxidation-reduction sequence: Application for medicinally important N-heterocycles ***RSC. Adv.* 2016,** *6*, 60422-60432.



Nisar. A. Mir, Sachin Choudhary, P. Ramaraju, D. Singh, and Indresh Kumar,* Microwave assisted aminocatalyzed [3+2] cycloaddition between α-iminonitriles and succinaldehyde: Synthesis of pyrrole-3-methylenealcohols and related polycyclic ring systems, ***RSC Adv.* 2016**, *6,* 39741-39749.

Enantioselective Synthesis of 1,2-Dihydropyridines by Formal [4+2] Cycloaddition, P. Ramaraju, **Nisar. Ahmad. Mir**, D. Singh, V. K. Gupta, R. Kant, Indresh Kumar,* ***Synfacts* 2016**, 12(1), 0026.P.

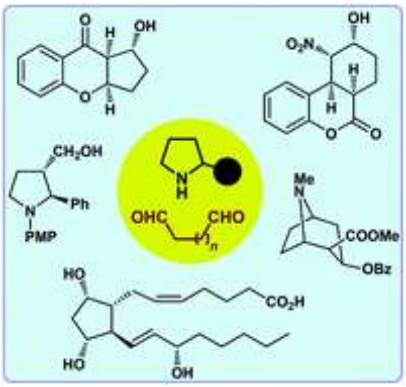
Ramaraju, **Nisar. A. Mir**, D. Singh, V. K. Gupta, Rajnikant and Indresh Kumar,*Enantioselective synthesis of *N*-PMP-1, 2-dihydropyridines via formal [4+2] cycloadditionbetween aqueous glutaraldehyde and imines, ***Org. Lett.* 2015*, 17***,** 5582-5585.



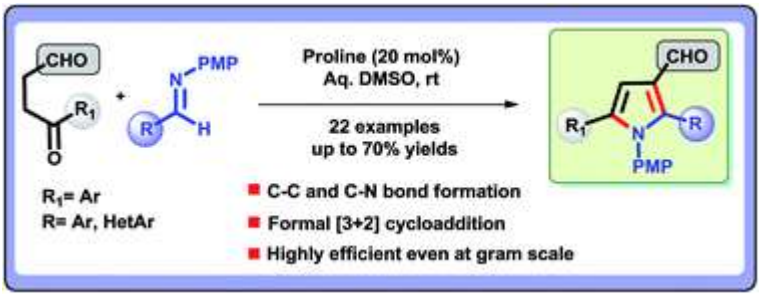
Highlighted in ***Synfacts* 2016**, *12*, (1), 0026.

Highlighted in ***organic chemistry webportal***.

Indresh Kumar,* P. Ramaraju, **Nisar. A. Mir,** Anoop Singh, Linear dialdehydes as promising substrates for amino catalyzed transformations, ***Org. Biomol. Chem.* 2015, *13*,** 1280-1293**.**



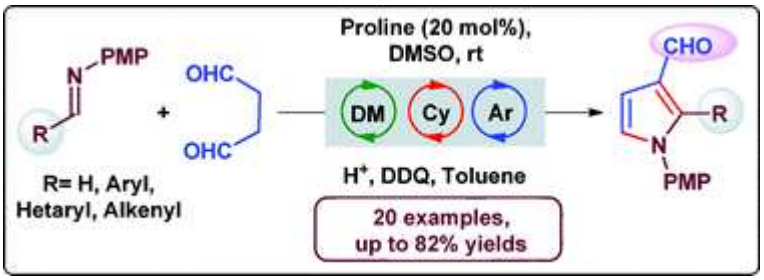
Indresh Kumar,* **Nisar. A. Mir**, P. Ramaraju, D. Singh, V. K. Gupta and Rajnikant, Direct catalytic synthesis of densely substituted 3-formylpyrroles from imines and 1, 4-ketoaldehydes, ***RSC Adv.* 2014**, *4*, 34548-34551.



Indresh Kumar,* P. Ramaraju, **Nisar. A. Mir**, V. K. Gupta, Rajnikant, Highly enantioselective [4+2] annulation *via* organocatalytic Mannich-reductive cyclization: One-pot synthesis of functionalized piperidines, *Chem. Comm*. **2013**, *49*, 5645.

Indresh Kumar,* P. Ramaraju, **Nisar. A. Mir**, Asymmetric trienamine catalysis: New opportunities in amine catalysis, *Org. Bio. Chem.* **2013, *11*, 709.**

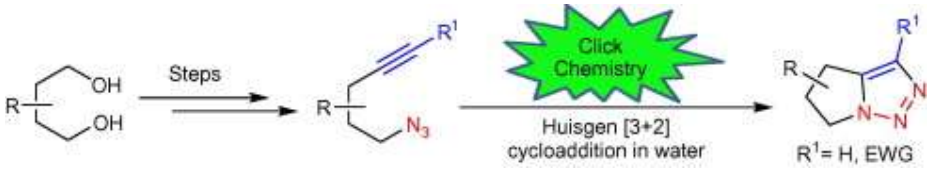
Indresh Kumar,* **Nisar. A. Mir**, Panduga R, Basant P. Wakhloo, Organocatalytic Mannich/cyclization/aromatization sequence: direct synthesis of substituted pyrrole-3-carboxaldehydes, *RSC Adv.* **2012, *2*,** 8922-8925.



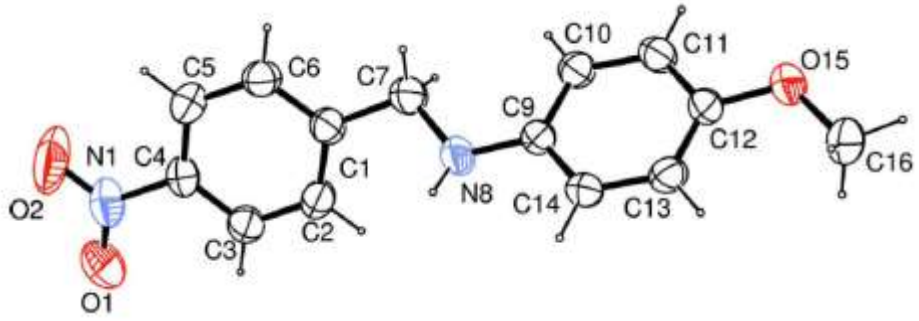
Listed In Top ten accessed articles in August (2012)

Indresh Kumar,* **Nisar. A. Mir**, Vivek K. Gupta and Rajnikant, Organocatalytic direct Mannich/cyclization cascade as [3+2] annulations. Asymmetric synthesis of 2, 3-substituted pyrrolidines, *Chem. Commun.* **2012**, *48*, 6975-78.

Indresh Kumar,* **Nisar. A. Mir**, C. V. Rode, B. P. Wakhloo, Intramolecular Huisgen [3+2] cycloaddition in water: Synthesis of fused pyrrolidine-triazoles, *Tetrahedron. Asymmetry.* **2012**, *23*, 225-229.



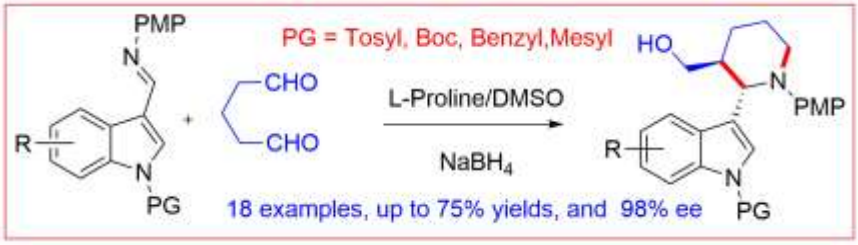
Kamini Kapoor, Vivek K. Gupta, Indresh Kumar,* **Nisar. A. Mir,** Rajni Kant, 2-Methoxy-*N*-(4-nitrobenzyl) aniline, *Acta Crystallographica E.* **2012,** *68*, o988 (Part4)



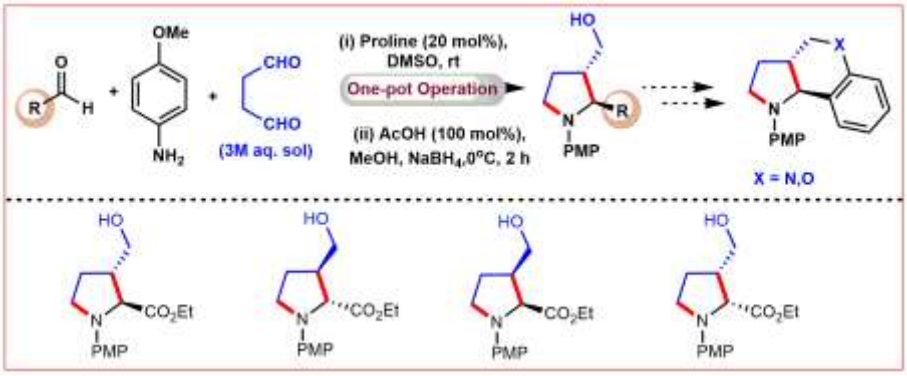
Bilal Ahmad Mir,* Jabeena Khazir, **Nisar A. Mir**, Tanvir-ul Hasan, and Sushma Koul, Botanical, chemical and pharmacological review of *Withania somnifera* (Indian ginseng): an ayurvedic medicinal plant. ***Indian Journal of Drugs and Diseases***. **2012,** *1*, 6, 2278- 2958.

Manuscripts under preparation

Nisar A. Mir, Anoop Singh, P. Ramaraju, D. Singh, Indresh Kumar,* Asymmetric synthesis of indole piperidines and related alkaloids.



Nisar A. Mir, P. Ramaraju, D. Singh, Indresh Kumar,* Organocatalytic One-pot, Multi-component Enantioselective Synthesis of highly functionalized pyrrolidines as tunable templates for the direct access to the tricyclic core of martinellines from Succinaldehyde, Aromatic aldehydes and *p*-anisidine.



Research Experience

- Postdoctoral Fellow at IIT Kanpur, under the supervision of **Prof. Dattatraya H. Dethe** Associate Professor, Department of Chemistry.
- One year Researh experience as CSIR-SRF from August, 2015 to July, 2016 at Birla Institute of Technology and Science Pilani under the supervision of **Dr. Indresh Kumar**, Assistant Professor, Department of Chemistry, BITS Pilani, Rajasthan, INDIA.
- Three-year research experience as (DST-JRF for initial two years and DST-SRF for last one year) under DST sponsored project at Birla Institute of Technology and Science Pilani under the supervision of **Dr. Indresh Kumar**, Assistant Professor, Department of Chemistry, BITS Pilani, Rajasthan, INDIA.
- One year research experience as Project Assistant on UGC-Project under the supervision of **Dr. Indresh Kumar** (Assistant Professor), School of Biology and Chemistry at Shri Mata Vaishno Devi University, Katra, Jammu, J&K, INDIA.

Teaching Experience

I have been involved in teaching at Department of Chemistry, GDC Pattan, Baramulla Campus as Assistant Professor and teaching following Courses from Feb 2021 till Date.

- **Environmental and Green Chemistry [DSC-1B Lab.]**
- **Chemistry of Biomolecules [DSC-1B Lab.]**
- **Polymer Chemistry and Material Chemistry**
- **Fundamentals of Inorganic and Organic Chemistry**
- **Anlytical Chemistry**

- **Chemical Experimental Laboratory of Different Semesters**

Apart From teaching I am working as Convener, Co-Convener and members of different Committees for the development and welfare of the college.
Acting as Asssistant Coordinator IGNOU SC 30013 GDC Pattan

I have been involved in teaching at Department of Chemistry, Women College Pulwama Campus as Assistant Professor and teaching following Courses.

- **Basic Principles of Physical Chemistry**
- **General Organic Chemistry**
- **Synthetic Organic Chemistry**
- **Fundamentals of Inorganic chemistry**
- **Chemical Experimental Laboratory [DSC-1B Lab.]**
- **Chemical Experimental Laboratory [DSC-2B Lab.]**

I have been involved in teaching at Birla Institute of Technology and Science Pilani, Pilani Campus as Graduate Teaching Assistant (**TA**) and have taught following Courses.

- **Chemical Experimental Laboratory [CHEM F341]**
- **Measurement Techniques Laboratory [CHEM F110]**

Technical Skills

- Synthesis of organic molecules and their analysis and characterization *via* Infrared, ^{1}H and ^{13}C NMR and mass spectroscopic techniques (ESI and HRMS).
- Performed separation and purification of organic compounds by TLC, column chromatography (both gravity as well as flash chromatography), fractional distillation, sublimation, preparative TLC and HPLC.
- Routine techniques like Drying of solvents, Distillation of solvents, vacuum pump distillation.
- RT reactions, Reactions under Nitrogen atmosphere, heating reactions, microwave reactions reactions in small and bulk scale.
- Handled equipment like Rotavapor, Microwave, Ultrasonicator, HPLC, NMR, IR and Polarimeter.
- Working knowledge of EndNote, Origin, Chem Draw, Origin, Scifinder, MestRe Nova for NMR interpretation, MS-Office word, power point, Adobe Page Maker, Adobe Photoshop, MS Excel etc.

Research Interest

- Asymmetric synthesis of biologically active heterocyclic compounds and development of new organocatalytic reactions *via* cascade transformations and domino reactions.
- Asymmetric synthesis of nitrogen heterocycles and its synthetic applications using organocatalysis.
- Development of new synthetic methodologies through green processes and total synthesis of the natural product and related nitrogen containing heterocyclic compounds.
- Study of the biological activity of organic compounds through organic synthesis and methodology based protocols.

Conferences and workshops attended

1. Poster Presentation entitled "Organocatalytic synthesis of *N*-substituted pyrrolo-[2, 3-*d*] pyridazinones from ethyl glyoxalate, *p*-anisidine, succinaldehyde and various hydrazines"during 22nd International Conference of **Indian Society of Chemists and Biologists (ISCB)** at Department of Chemistry, at Uka Tarsadia University, Surat, India, (**6th- 8th February 2016**).

2. Poster Presentation entitled "Synthesis of densely substituted 3-formylpyrroles from imines and 1, 4-ketoaldehydes using proline as an organocatalyst"during International Conference on **"Nascent Developments in Chemical Sciences: Opportunities for Academia-Industry Collaboration" (NDCS-2015)** organized by the Department of chemistry at BITS Pilani, Rajasthan, India during (**16th-18th October 2015**).

3. Oral Presentation entitled "Organocatalytic direct Mannich/cyclization cascade towards the synthesis of densely substituted nitrogen heterocycle" during **Research Scholar Day organized** by department of physics, at BITS Pilani, Rajasthan (**15th March 2015**)

4. Oral Presentation entitled "Organocatalytic approach towards the synthesis of substituted pyrroles from imines and 1, 4-ketoaldehydes" during **National Conference on Frontiers at the Chemistry Allied Sciences Interface (FCASI)** at Department of Chemistry, University of Rajasthan, Jaipur, India (**13th - 14th March 2015**).

5. Poster Presentation entitled "Organocatalytic synthesis of densely substituted 3-formyl pyrroles from imines and 1, 4-ketoaldehydes" during 21st-International Conference of **Indian Society of Chemists**

and Biologists (ISCB) at Department of Chemistry, CDRI, CSIR, Lucknow, U.P, India (**25th- 28th February 2015**).

6. Poster Presentation entitled "Organocatalytic direct Mannich/cyclization cascade towards the synthesis of 2, 3-disubstituted pyrrole-3-carbaldehydes." during **National Conference on Nano and Functional Materials (NFM-2014)** organized by department of Chemistry, at BITS Pilani, Rajasthan (**8th- 10th November 2014**).

7. Poster Presentation entitled "Organocatalytic direct Mannich/cyclization cascades towards the synthesis of 2, 3-disubstituted pyrrole-3-carbaldehydes." during **International Symposium on Recent Advances in Medicinal Chemistry (ISRAM-2014)** at Department of Medicinal Chemistry, NIPER, Mohali, Punjab, India (**8th- 10th September 2014**).

8. Oral Presentation entitled "Organocatalytic approach towards the synthesis of five-membered nitrogen heterocycles" during **Research Scholar Day** organized by department of physics, at BITS Pilani, Rajasthan (**23rd March 2014**).

9. Poster Presentation entitled "Organocatalytic asymmetric [3+2] annulations towards the synthesis of substituted pyrrolidine ring systems" during 20th International Conference of **Indian Society of Chemists and Biologists (ISCB)** at Department of Chemistry, University of Delhi (**1st- 4th March 2014**).

10. Oral Presentation entitled "Organocatalytic direct Mannich/cyclization cascade as [3+2] annulation: Asymmetric synthesis of 2, 3-substituted pyrrolidines" during **National Conference on Recent Developments in chemical Sciences (NCRDCS)** at GJUS&T, Hisar, Haryana (**25th - 26th February 2014**).

11. Poster Presentation entitled "Organocatalytic synthesis of *N*-substituted pyrrolo-[2, 3-*d*] pyridazinones from ethyl glyoxalate, *p*-anisidine, succinaldehyde and various hydrazines"during **National Conference on Recent Developments in chemical Sciences** at Department of Chemistry, at BITS Pilani, Rajasthan (**28th - 29th -September 2017**).

12. Attended **National Work shop on Recent Developments in chemical Sciences** at Department of Chemistry, at University of Kashmir (**!8th- 19th -June 2017**).

13. Oral Presentation entitled "Organocatalytic approach towards the synthesis of nitrogen containing heterocylses and related alkaloids" during **National Conference on Recent Developments in chemical Sciences (NCRDCS)** at Government Degree College Sopore (3rd- 4rd **November 2017**).

14. Attended four week induction programme at IASE Srinagar in 2017

15. Attended General Orientation Program of Four weeks at University of Kashmir HRDC Centre in 2018

16. Attended Two Week refresher Course in Science at University of Kashmir HRDC Centre in 2019

17. Attended One Day **National Work shop on Recent Developments in chemical Sciences** at Department of Chemistry, at Gandhi College Srinagar in 2019.

18. Attended Three days **National Work shop on Disaster Management** at IMPA, Srinagar in 2019.

19. Attended one day workshop at University of Kashmir in 2022 on DST Project Work BY SERB DST New Delhi.

20. Attended Two Week refresher Course in Research Methodology at M.A. Road Srinagar in Collaboration with University of Kashmir HRDC Centre from Oct, 18th 2022 to Nov, 2nd 2022.

Work Style

- Willing to perform basic tasks and move on to solve complex problems.
- Able to learn new knowledge and adapt to new environments quickly.
- Strong independent work style and excellent teamwork skills.
- Well-organized and passionate.

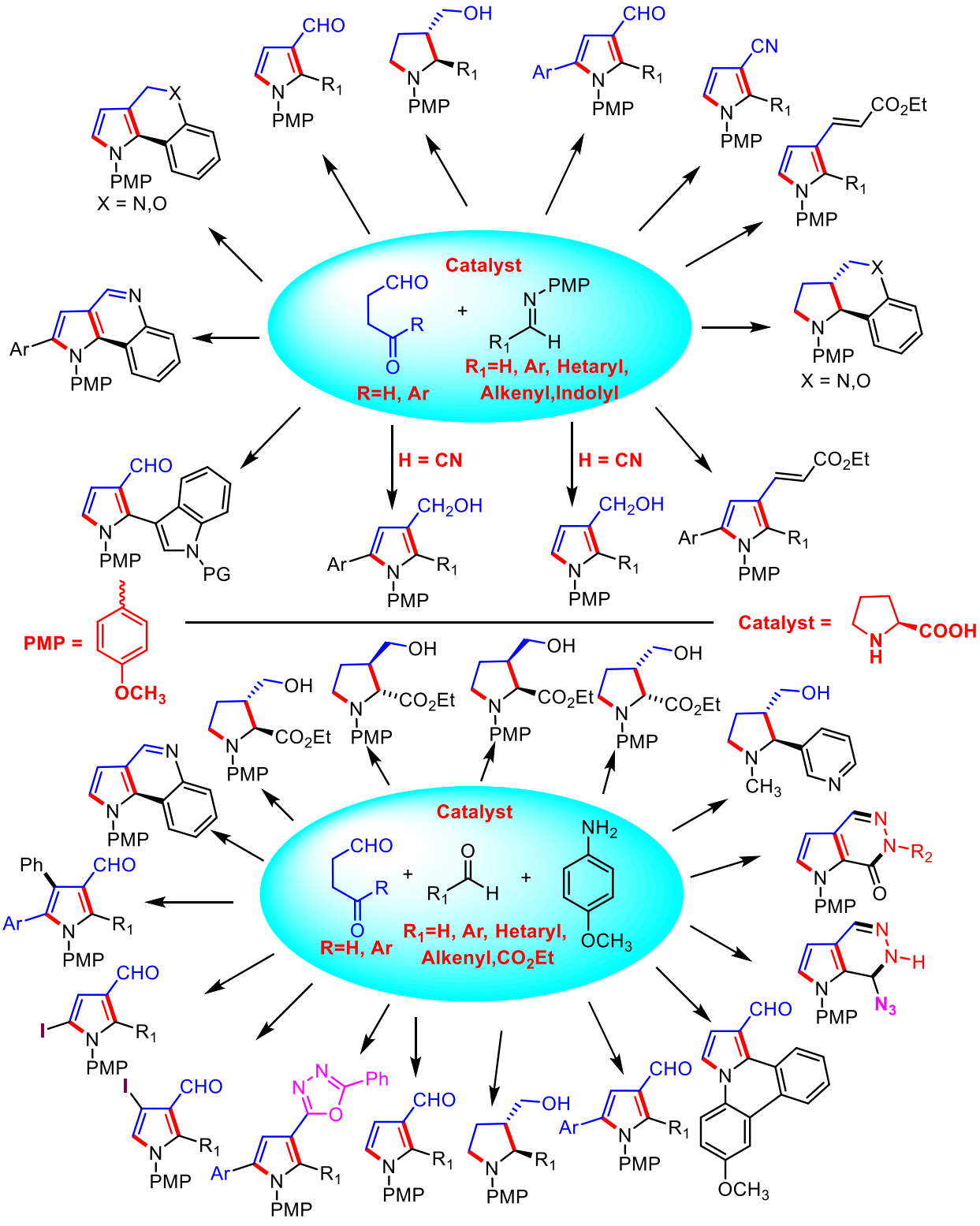
Career Objective

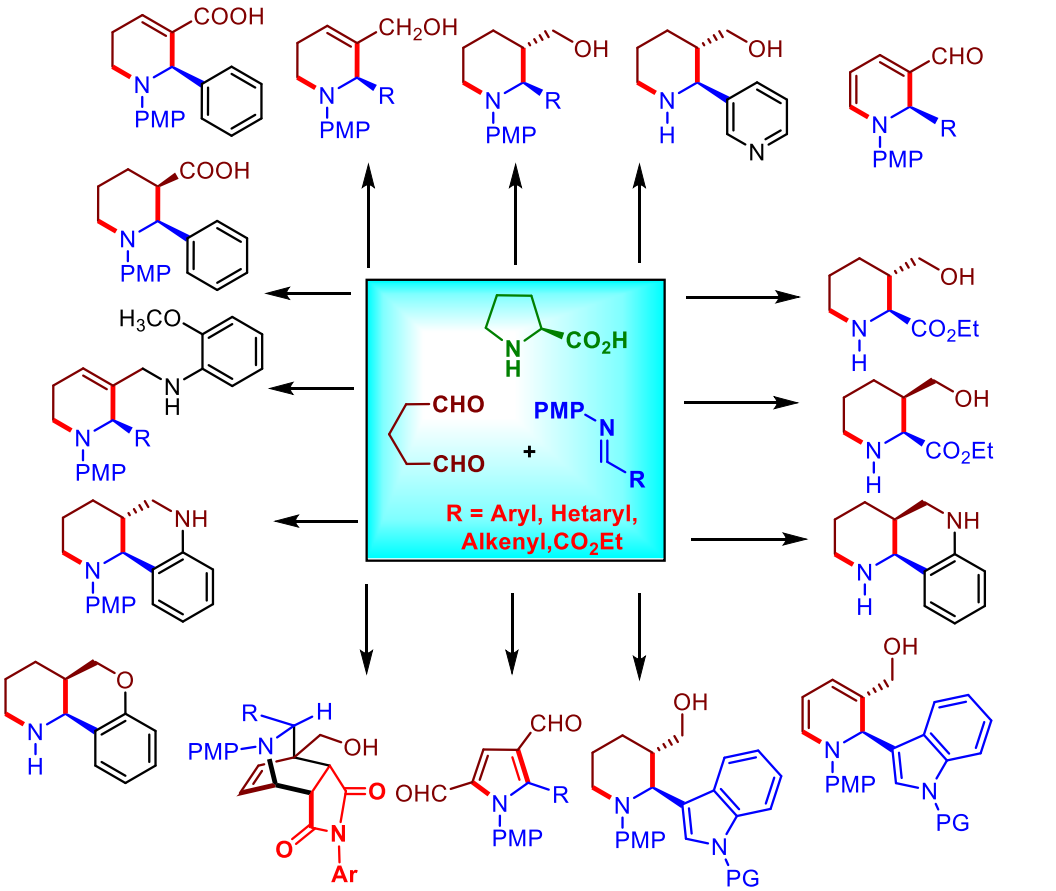
- To work in a professional organization, in an environment that promotes teamwork, provides challenges.
- To make a significant contribution to the success of the organization.
- At the organizational level, apart from giving importance to deadlines, a systematic approach to providing quality solutions.

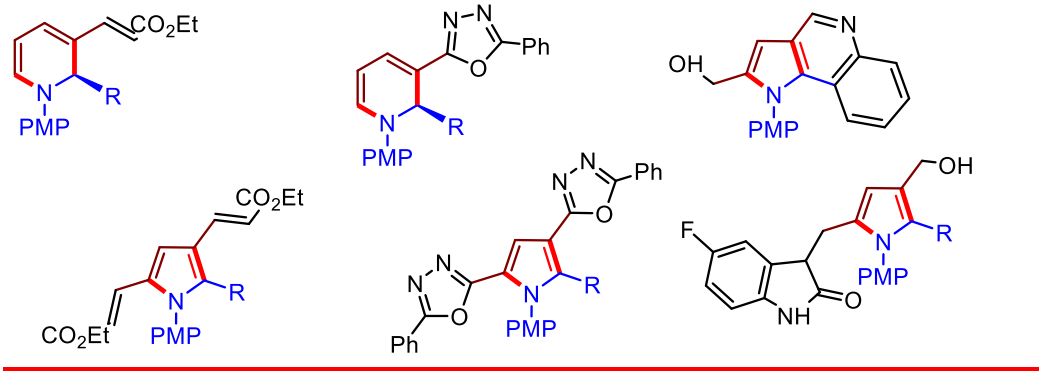
Research Overview

Nitrogen-containing heterocyclic compounds have been known to have a tremendous potential in multidisciplinary fields. The work mentioned in this thesis entitled "**Organocatalytic approach towards the synthesis of five-membered nitrogen heterocyclic compounds**" deals with the synthesis of some selected five-membered nitrogen heterocycles such as substituted pyrrolidines, pyrroles, pyrrolo-pyridazinones in asymmetric as well as in non-asymmetric fashion. The main strategy involves [3+2] annulation between succinaldehyde or 1, 4-ketoaldehydes, with various *N*-PMP-aldimines, which involves amine catalyzed direct Mannich reaction followed by reductive or

oxidative cyclization sequence. This work is concerned with the utility of linear dialdehydes which acts as 1, 3 and 1,4-carbon *donor-acceptor* (D-A) precursors for the one-pot domino/tandem sequence with imines. Our work is focused on developing new and elegant organocatalytic asymmetric as well as non-asymmetric reactions that are highly efficient and of broad utility. We are interested in the application of these novel reactions to the build various organic molecules for their potential application in medicinal chemistry as well as in material science. More specifically, the main focus of our research is to develop novel synthetic methods for the synthesis of small sized nitrogen heterocyclic skeletons using the concept of aminocatalysis. Unlike the biological processes, where nature takes advantage of enzyme architecture to facilitate a multiple reaction manifold, it is very difficult to exploit on such process in a flask because of obvious compatibility issues associated with catalysts. The design and discovery of novel compatible catalytic systems in the laboratory remains only the way to achieve such enzyme-like reactivities and selectivities. The important feature of this type of catalysis lies in a fact that there are number of ways to make the reaction enantioselective by using a single chiral organocatalyst. We are trying to develop novel catalytic reactions based on organocatalysis to obtain various organic molecules which could have potential application in medicinal chemistry and in material science. We found that some of the synthesized molecules show excellent activities against bacteria and fungi.


Catalyst
R=H, Ar
R1=H, Ar, Hetaryl, Alkenyl,Indolyl
H = CN
H = CN
X = N,O
X = N,O
PMP =
OCH3
Catalyst =
COOH
Catalyst
R=H, Ar
R1=H, Ar, Hetaryl, Alkenyl,CO2Et


R = Aryl, Hetaryl, Alkenyl,CO2Et



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Declaration

I hereby declare that the information furnished by me is true to the best of my knowledge and belief.

Thanking you,
Dr. Nisar Ahmad Mir