Faculty Details proforma for DU Web-site

(PLEASE FILL THIS IN AND Email it to websiteDU@du.ac.in and

Title	Dr.	First Name	Akhilesh Kumar	Last Name	Verma	Photograph
Designation		Professor				
Address		Room No. 208, Block C (Multistoried building) Department of Chemistry, North Campus, University of Delhi Delhi-110007				
Phone No Office		91-11-27666646 (Ext.175)				
Residence		011-27298955				
Mobile		09717831262				
Email		averma@acbr.du.ac.in, akhilesh682000@gmail.com				
Web-Page		www.akvresearch.com				

3Educational Qualifications

Degree	Institution	Year	
Ph.D.	Dept. of Chemistry, University of Delhi, Delhi	2000	Chemistry
PG	Bipin Bihari PG College Jhansi, Bundelkhand University	1992	Organic Chemistry
UG	Bipin Bihari PG College Jhansi, Bundelkhand University	1990	Chemistry, Zoology

Career Profile

Organization / Institution	Designation/ Award	Duration	Role
Dept. of Chemistry, University of Delhi, Delhi	Professor	29th March 2013-Till date	Teaching and Research
School of Physical Sciences, Jawaharlal Nehru University, Delhi, India	Professor	21st January 2015-18th November 2015 (on Lien from DU)	Teaching and Research
Dept. of Chemistry, University of Delhi, Delhi	Associate Professor	29th March 2010- 29th March 2013	Teaching and Research
Dept. of Chemistry, University of Delhi, Delhi	Reader	23rd Jan 2009-28th March 2010	Teaching and Research
Dr. B.R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi	Lecturer	Feb. 1998-2009	Teaching and Research
University of Florida, Gainesville, USA	Postdoctoral Fellow	Jan. 2001-Dec 2001	Research
University of Florida, Gainesville, USA	Postdoctoral Research Associate	Jan. 2002-Dec 2002	Research
University of Science and Technology, Ames, Iowa, USA	Visiting Scientist	June 2007-Aug. 2008	Research

Administrative Assignments

- Convener Advanced Organic Chemistry II (CHM 108) [at ACBR]
- Convener Advanced Organic Chemistry I (CHM 107) [at ACBR]
- In-charge Summer Under Graduate Research Programme (**SURP**) at ACBR 2003 and 2004
- In-charge for the Educational trip of M.Sc/Ph.D students of ACBR in the year 1998 and 2000
- Construction Co-coordinator of ACBR
- Admission in-charge M.Sc/Ph.D Biomedical courses entrance examination (Twice at ACBR)
- Syllabus formulation and revision of B.Sc. Biomedical Sciences course
- Co-Convener: CBISNF-2004 (International Conference)
- Treasurer ETDDD 2013

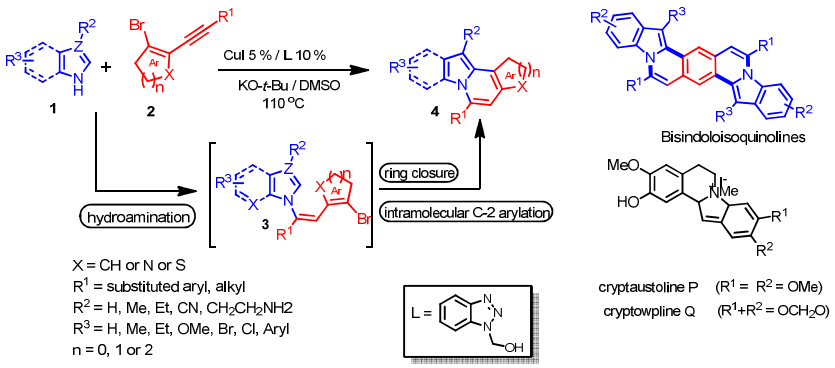
Areas of Interest / Specialization

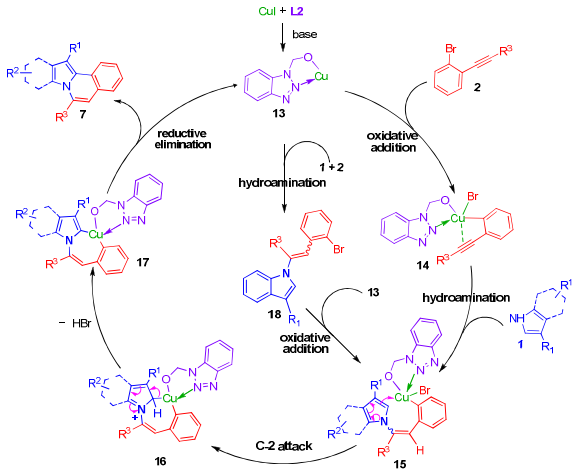
Areas of Interest: Synthetic Organic Chemistry / Bioorganic Chemistry

- Cascade and Tandem reactions for the synthesis of multi ring heterocyclic compounds
- Design of benzotriazole based novel ligands for the copper and palladium-catalyzed coupling reactions
- Alkyne Chemistry: i. Electrophilic cyclization of alkynes; ii Stereoselective hydroamination of alkynes; iii synthesis of fused heterocyclic systems by electrophilic iodocyclization of alkynes
- Sequential coupling reactions and [3+2] alkyne annulation

Project 1

"Regiselective Tandem Synthesis of Variety of Fused-heterocycles by the Copper and Palladium-Catalyzed *preferential addition of N-heterocycles on ortho-haloalkynes* followed by C-C bond formation



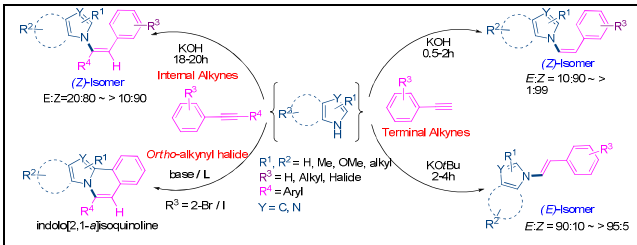


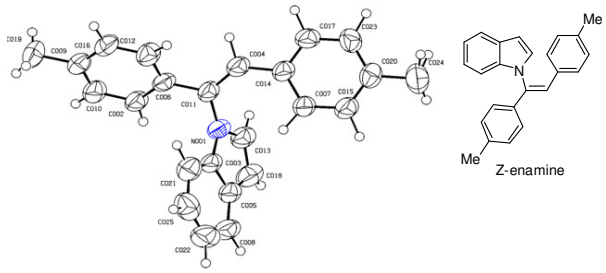
Angew. Chem Int. Ed. **2009**, *48*, 1138-1143

This is one of the most exciting and major research projects of our laboratory, which allow direct access of various types of diversely substituted *N*-heterocycles, Carbocycles, Natural products, Synthetic drugs and π-conjugated organic materials.

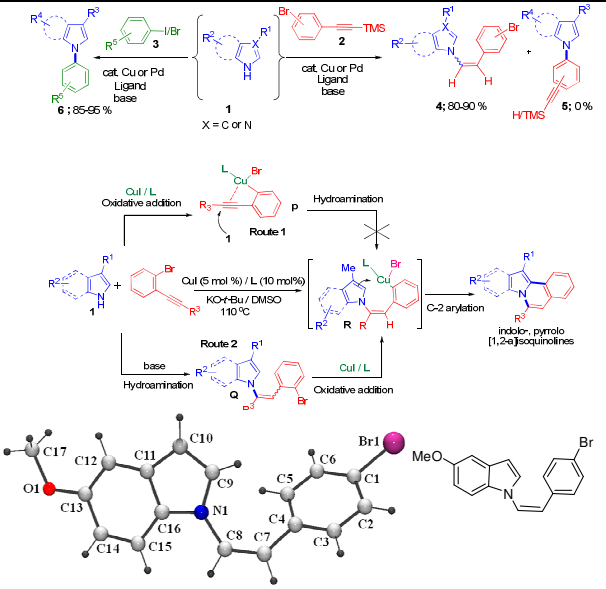
In the long history of alkynes electrophilic cyclization chemistry, the synthesis of polyheterocycles by the nucleophilic addition of *N*-heterocycles onto alkynes, followed by *in situ* ring closure by C-C bond formation has not much explored. In this project we have successfully synthesized indolo, pyrrolo[2,1-a]isoquinolines and Naphthyridines regioselectively by the copper and palladium-catalyzed preferential addition of *N*-heterocycles over *N*-arylation on to alkynes, followed by intramolecular C-2 arylation without isolating enamine intermediate generated in *in situ*, in the reaction. Application of developed chemistry for the synthesis of other interesting heterocycles and organic materials is currently under way in our laboratory and will be reported in due course.

Conformation of the Proposed Mechanism





Org. Lett. **2011**, *13,* 1630-1633, *J. Org. Chem*. **2012**, 77, 5633-5645

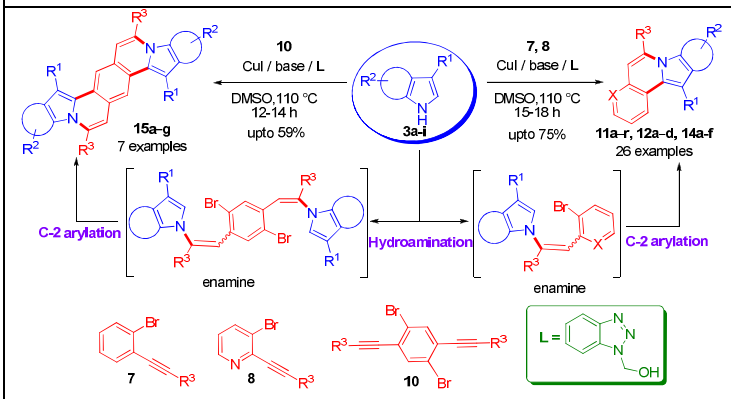


Org. Lett. **2012,** *14***,** 1106-1109.

Regio- and stereoselective addition of *N*-heterocycles to alkynes using KOH was performed and it was found that, Formation of (Z)-isomers and its conversion in to (E)-products was found to be dependent upon time as well as choice of the base. Selective attack of *N*-heterocycles on more electrophilic alkynyl carbon and stereochemistry of the products was confirmed by the DFT calculations, X-ray crystallographic studies and intramolecular cyclization of *ortho*-haloalkynes in to indolo-[2,1-*a*]isoquinolines. This study supports the formation of indolo/pyrrolo[2,1-*a*]isoquinolines via Z-enamine.

Reaction of various *N*-heterocycles and *halo*-substituted arylalkynes was performed and it was observed that hydroamination is preferred over amination of aryl halide. The results of the present study, preferential addition of *N*-heterocycles onto *halo*-substituted arylalkynes suggests that the mechanism of the copper-catalysed tandem synthesis of indolo- and pyrrolo[2,1-*a*]isoquinolines proceeds via generation of intermediate **Q** through hydroamination followed by oxidative addition to the key intermediate **R** and not vice versa (route 2).

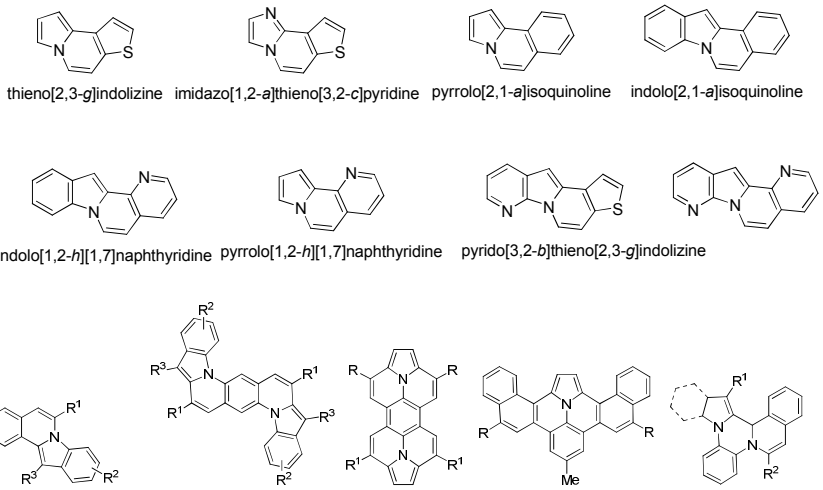
Synthetic application: Synthesis of 1,6-Naphthyridines, bisindolo-, and pyrrolo[2,1-*a*]isoquinolines



J. Org. Chem. **2012,** *77*, 8191–8205

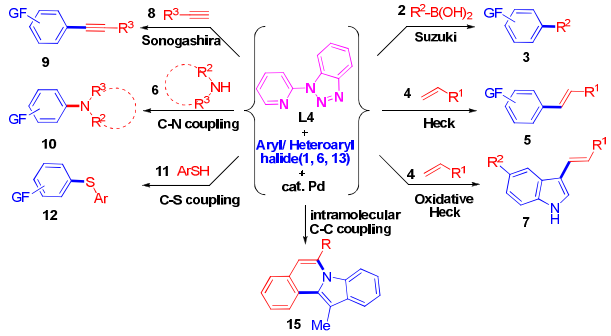
We have successfully extended the scope of the developed chemistry for the regioselective tandem synthesis of biologically important **Naphthyridines** and bisindolo[2,1-*a*]isoquinolines, a regioisomer of bisindolo[2,1-*a*]quinolines used as single-crystal field-effect transistor.

(Developed novel chemistry can allow direct access of various types of diversely substituted *N*-heterocycles, Carbocycles, Natural products, Synthetic drugs and π-conjugated organic materials.)



Project 2

2-(1-Benzotriazolyl)pyridine (BtPy): A Novel Inexpensive and Robust Ligand for the Palladium-Catalyzed C-C (Suzuki, Heck, Oxidative-Heck, Sonogashira), C-N and C-S Coupling Reactions



Tetrahedron Lett. **2007**, *48*, 4207-4210; *Tetrahedron Lett.* **2007**, *48*, 7199-7202; *Tetrahedron* **2009**, *65*, 8434-8439; *Advances in Heterocyclic Chemistry* **2012** , *107*, 103-132; *Adv. Syn. Cat.* **2013**, *355,421-438*

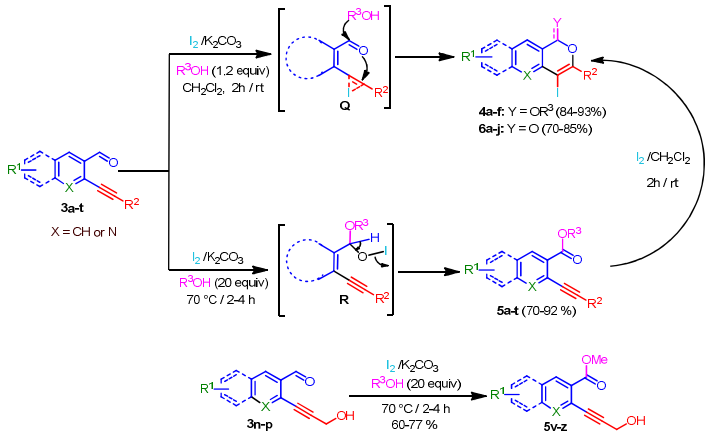
In continuation of our work on the designing of benzotriazole based ligands for the coupling reactions, recently we have designed an N,N type phosphine free, air stable and robust ligand **BtPy** by incorporating pyridine ring at *N*-1 position of the benzotriazole. Results of using this ligand are very interesting and significant. We have first time observed that designed ligand **BtPy** efficiently catalyzed the Suzuki, Heck, Oxidative-Heck, Sonogashira, Buchwald-Hartwig (C–N), and C–S coupling reactions.

Project 3

Iodine-mediated chemoselective direct oxidative esterification of aldehydes without affecting alkynes and 1^0 alcoholic groups: New addition in the functional group transformations

This is another interesting and practically useful novel chemistry being developed in our laboratory. This developed process provides a novel access for the chemoselective synthesis of esters from aldehydes without oxidizing/affecting the primary alcoholic and alkyne group present in the substrate via formation of hypoiodide intermediate. Developed oxidative esterification process, provides a powerful tool for the synthesis/preparation of wide range functionalized pyranoquinolinones, isocoumarins, α-pyranones and natural products. Process is a useful addition in the organic functional group transformations where protection and deprotection is required.

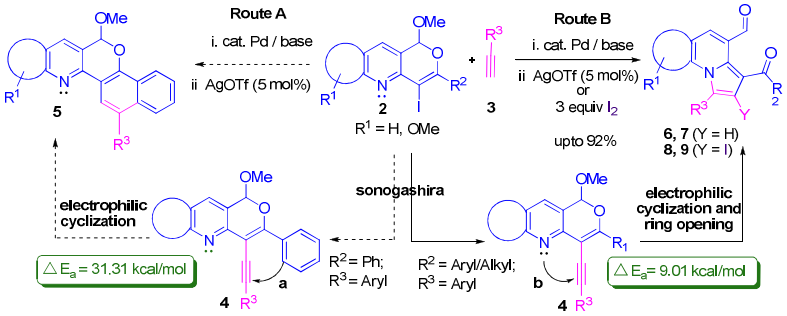
Note: *This chemistry has been successfully implemented in the M. Sc practical as a green practical.*

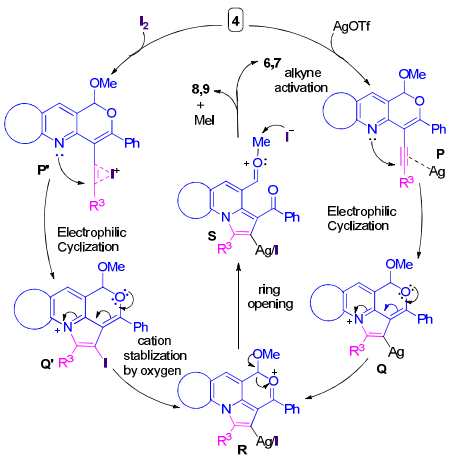


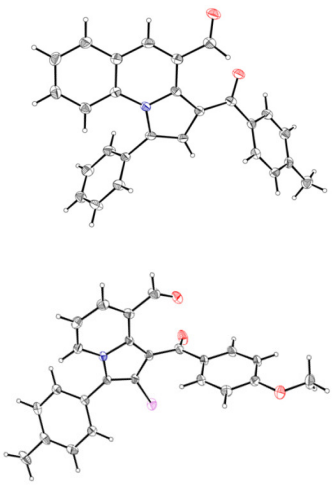
J. Org. Chem. **2010**, 75, 7691-7703, *Chem. Commun*, **2010**, 46, 4064-4066, *ACS Comb. Sci.* **2011**, 13, 530-536

Project 4

(A) Site-selective electrophilic cyclization and subsequent ring opening: An efficient route to pyrrolo[1,2-*a*]quinolines and indolizines



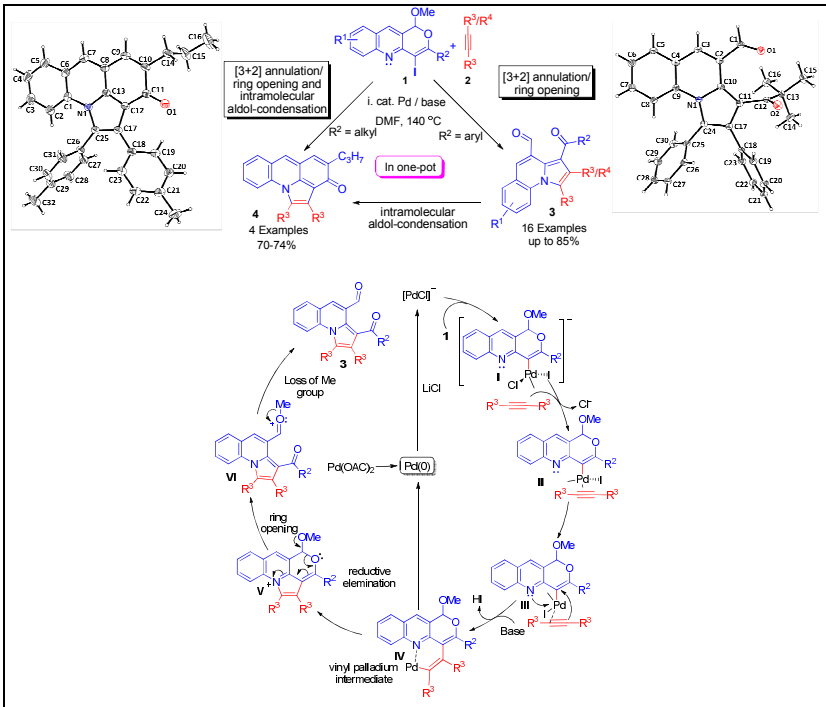




An efficient strategy for the synthesis of pyrrolo[1,2-*a*]quinolines and indolizines from pyranoquinolines via site-selective electrophilic cyclization and subsequent opening of pyran ring using silver/iodine under mild reaction conditions is described. This approach involves preferential attack of pyridyl nitrogen over aryl ring and leads to the formation of 5-*endo-dig* cyclized products. Quantum chemical calculations between C-N (ΔE_a = 9.01 kcal/mol) and C-C (ΔE_a = 31.31 kcal/mol) bond formation were performed in order to rationalized the observed site selectivity. Structure of the products was confirmed by X-ray crystallographic studies. Iodine substituted compounds generated by the electrophilic iodocyclization were further diversified via Pd-catalyzed cross-coupling reactions.

J. Org. Chem. **2012,** 77, 8562–8573

(B) Palladium-catalyzed regioselective [3+2] annulation of internal alkynes and iodo-pyranoquinolines with concomitant ring opening: Efficient approach for the synthesis of pyrrolo[1,2-*a*]quinolines and acridones

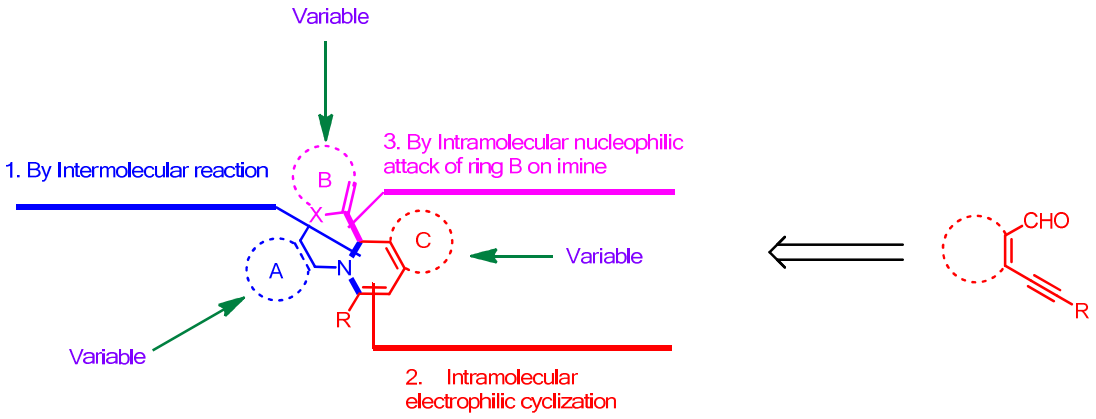


Org. Lett. **2012,** *14*, 5184–5187, *J. Org. Chem*. **2013**, 78, 5372–5384

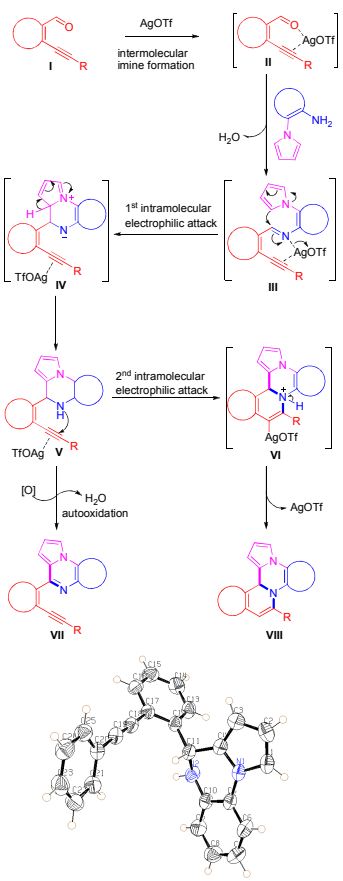
A regioselective tandem synthesis of highly functionalized pyrrolo[1,2-*a*]quinolines has been developed through a novel strategy by palladium-catalyzed [3+2] annulation of iodo-pyranoquinolines and internal alkynes with subsequent ring opening. This chemistry was successfully extended for the synthesis of diverse pharmaceutically important pyrrolo-acridinone via [3+2] annulations/ring opening and successive intramolecular cross-aldol condensation. It is noteworthy, that unsymmetrical internal alkynes containing propargyl alcoholic group, selectively afforded single isomer. Further investigation of the scope and synthetic applications of the present strategy are currently underway and will be reported in due course.

Project 5

Diversity Oriented Synthesis (DOS) of Over Hundred Natural-Product-Likes and π-Conjugated Scaffolds: A Novel Cascade Reaction.



This is another one of the most challenging ongoing projects of our laboratory, in which we had design a novel cascade reaction for the synthesis of more than hundred scaffolds (achiral and chiral) in one go. We had successfully established the mechanism for the designed reaction by identifying reaction intermediates by X-Ray crystallographic studies.



Green Chem. ***2011****, 13, 1640-1643*; *Eur. J. Org. Chem.* ***2012****,* 4590-4602

Design and synthesis of biologically relevant, drug-like small molecules to perturb and analyze biological systems is one of the main challenges in the medicinal chemistry. Diversity Oriented Synthesis (DOS) of small molecules is new algorithm that enables efficient synthesis of complex molecules. This is one of the most challenging ongoing projects of our laboratory by using electrophilic cyclization chemistry.

In this project we have designed a novel cascade synthetic strategy for the "**Diversity Oriented Synthesis (DOS) of Over Hundred Heterocyclic/Natural-Product-Likes and π-Conjugated Scaffolds**". Strategy involves the construction of designed scaffolds by the reaction of *ortho*-akynyaldehydes with appropriate amines/nucleophiles under silver-catalysis by the sequential **i)** intermolecular C-N bond formation; **ii)** followed by two intramolecular C/N/O/S-C (attack of nucleophile on imine carbon: **intermediate III**) and N-C (attack of nitrogen on activated alkyne: **intermediate V**) bond formation. The mechanism of the designed reaction is well established by the spectroscopic and X-Ray crystallographic studies of the isolated intermediates **III**, **V** and the final product **VIII**.

We have successfully synthesized more than 50 distinct heterocyclic scaffolds (>350 distinct novel compounds). It is important to mention that above 25 scaffolds (> 100 novel molecules) were synthesized in water using $AgNO_3$ as a catalyst. The scope of the developed chemistry was successfully extended for the synthesis of sterioselective and diastreoselective molecules. This developed process is expected to find application in organic synthesis/medicinal chemistry/material science in general, and in the construction of a variety of interesting compounds. The preliminary results are very exciting and interesting. Preliminary *in-vitro* screening results of some scaffolds on cancer cell lines are very impressive.

Subjects Taught

Over thirteen years I have been involve in the teaching of following topics of Organic Chemistry:

- Basic concepts of Organic Chemistry and study of reactive intermediates
- Reaction Mechanism
- Heterocyclic Chemistry
- Newer Synthetic Methods
- Methods in Organic Synthesis (Coupling reactions, Reducing and Oxidizing agents)

Research Guidance

1. *Supervision of Awarded Doctoral Thesis*

i. Kumar R. **2005**. Copper nanoparticle catalysed C-N bond formation: Michael reaction and amination of aryl halides. University of Delhi.

ii. Tiwari R. K. **2005**. Synthesis of substituted 1,2,3,4-tetrahydropyrazino[1.2-a]indoles and 1,2.3,4 tetrahydroisoquinolines via intramolecular cyclization using benzotriazole methodology. University of Delhi.

iii. Chaudhary P. **2006**. Synthesis and Antimicrobial acitivity of N-alkyl and N-aryl piperazine derivatives using benzotriazole methodology. University of Delhi.

iv. *Aggarwal A. **2008**. An evaluation of the effect of the extracts of Asparagus racemosus on hepato carcinogenesis initiated by Diethylnitrosamine in an animal model. University of Delhi.

v. Sankar V. K. **2009**. Benzotriazole assisted synthesis of 1,2- and1,5- annulated polycyclic quinoxalines. University of Delhi.

vi. Singh J. **2010**. Design of benzotriazole based ligands for Cu/Pd-catalyzed C(aryl)-N, C-(aryl)C and C-S bond formation. University of Delhi.

vii. Imam M. **2010**. Structural and Immunological Characterization of Merozoite Surface Protein 3 of *Plasmodium falciparum.* University of Delhi.

viii. Kaushik N. **2010**. Synthesis of 1,2,3,4-Tetrahydropyrazino[1,2-a]indoles and their Biological Evalution. University of Delhi.

ix. Chaudhary R. **2011**. 2-(1-Benzotriazolyl)pyridine: A Novel Bidentate Ligand for the Coupling Reactions. University of Delhi

x. Negi A.** **2011.** Role of Metalloprophyrins in Modulating Malaria Induced Haemolytic Anaemia in Mouse Model

xi. Joshi M. **2012**. Base mediated regio- and stereoselective intermolecular hydroamination of alkynes.

xii. Aggarwal T. **2012**. Regioselective Synthesis of Polyheterocycles by the Electrophilic Iodocyclization of Alkynes and Metal-Catalyzed Diversification

xiii. Rustagi V. **2012**. Ag(I)-Catalyzed Regioselective Tandem Synthesis of Fused Heterocycles from ortho-Alkynylaldehydes.

xiv. Shukla S. P. **2012** Iodine-Mediated and Metal-Catalyzed Synthesis of Heterocycles via Electrophilic 6-*endo*-*dig* Ring Closure of Alkynes.

xv. Jha R. R. **2013** Stereoselective Synthesis of Fused Heterocycles by Tandem Reaction of Alkynes

xvi. Dhanodia A. **2014** Palladium-Catalyzed Tandem Synthesis of Carbocycles and Heterocycles by sequential coupling reaction

xvii. Shiva Kotla Reddy **2015:** Synthesis of heterocycles by multi component reaction.

xviii. Rakesh Kumar Saunthwal **2017**: Novel approaches for the synthesis of *N*-heterocycles via C-H activation/[4+2] cycloaddition and Michael addition.

xix. Monika Patel **2017**: Base Assisted Chemo- and Regioselective C-N, C-S and C-O Bond Formation with Isotopic Labeling Studies.

xx. Sonu Kumar **2017**: Tandem Approaches for the synthesis of Fused *N*-Heterocycles via 6-endo-dig Ring.

xxi. Deepak Chaudhary **2017**: Novel Approaches for the Synthesis of Structurally Diversified N/S/O-Heterocyclic Compounds

xxii. Shilpi Pal (**Submitted 2017**): Transition-metal and lewis acid promoted synthetic approach to multifunctionalization of ortho-arylalkynylaldehydes

xxiii. Pradeep Beniwal (**Submitted 2018**): Strategies for the Synthesis of N/O-Heterocycles via [3+2] Cycloaddition, Azidation, Staudinger Reaction and Alkyne Activation

xxiv. Vineeta Garg (**Submitted 2018**):KOD/DMSO Assisted Chemo-, Regio- and Stereoselective Hydroamination of N-Heterocycles/Nucleobases Using Activated and Unactivated Alkynes

*as a co-supervisor

** Signed on behalf of Prof. Ramesh Chandra

2. Supervision of Doctoral Thesis, under progress

i. Pawan Mishra (Year of Registration: 2016)

ii. Kapil Mohan Saini (Year of Registration:2016)

iii. Shiv Kumar (Year of Registration:2017)

iv. Shalini Verma (Year of Registration:2017)

v. Manoj Kumar (Year of Registration:2017)

vi. Sushmita Yadav (Year of Registration:2018)

vii. Ankit (Year of Registration:2018)

3. Supervision of Post –Doctoral/Research Associate

1. Dr. Trapti Aggarwal
2. Dr. Navneet Kishore

4. Supervision of awarded M.Sc dissertations

1. Dutt, D. 2010. Iodine-catalyzed direct synthesis of ester from aldehydes by the oxidative esterification. University of Delhi.

2. Nautiyal, A. 2009. Synthesis and antibacterial activity of 4,5-dihydro-pyrrolo-[1,2-*a*]quinoxalines. University of Delhi.
3. Omkar, S. 2009. Synthesis and Antibacterial activity evalution of Polycyclic quinoxalines. University of Delhi
4. Nimkar, C. 2009. Synthesis and *invitro* acticancer evaluation of indolo[2,1-a]isoquinolines. University of Delhi
5. Manzar, M. D. 2007. Synthesis and *in-vitro* antibacterial activity of amino and *N*-alkyl 1,2,3,4-tetrahydropyrazino[1,2-*a*]indoles against resistant bacterial strains. University of Delhi.
6. Sonowal, R. 2007. Synthesis and antibacterial activity of 8-pyrrol-1-yl-4,5-dihydro-pyrrolo[1,2-a]quinoxalines. University of Delhi.
7. Ranjan, A. 2006. Synthesis and antibacterial activity of substituted piprazin-1-carbothioamide and carboxamide. University of Delhi.
8. Verma, S. 2004. Synthesis of phenethylamine moiety based psychotomimetics using benzotriazole methadoogy. University of Delhi.
9. Das, T. 2004. Novel ^{99m}Tc labeled 1-(*p*-fluoro); 1-(*p*-chloro) and 1-(*m*- methoxy)-6, 7-dimethoxy-1,2,3,4-tetrahydroisoquinolines as imaging agents in nuclear medicine. University of Delhi.
10. Subodh, P. K. 2004. Antibacterial activity of N- alkyl and N-aryl derivatives of piperazines. University of Delhi.
11. Sethi, G.K. 2003. Synthesis of *N*-methyl, *N*-benzyl piperazine analogues by using benzotriazole methodology. University of Delhi.
12. Kumar, R. 2000. Synthesis of *p*-hydroxyphenyl glycine. University of Delhi.

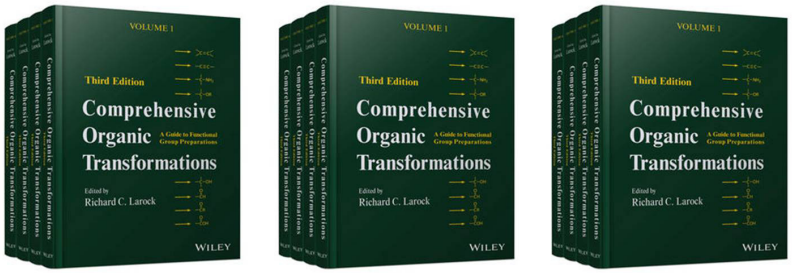
Publications Profile

I. *Books*

Comprehensive Organic Transformations III: A Guide to Functional Group Preparations, *Hardback, Edited by Richard C. Larock,*

Authors*: Akhilesh K. Verma, Anton V. Dubrovskiy, Tanay Kesharwani, Nataliya A. Markina, Alexandre A. Pletnev, Cristiano Raminelli, Tuanli Yao Gilson Zeni, Li Zhang Author Xiaoxian Zhang,* ISBN-139780470927953,

Publishers: John Wiley and Sons Ltd, Wiley-Blackwell Publication date 2 Mar 2018, 3rd Edition



Book Chapter: in Advances of Heterocyclic Chemistry. Benzotriazoles: A Robust Ligand in Coupling Reactions *Advances in Heterocyclic Chemistry* **2012**, *107*, 103-132

II. *Publications (Last five years) – in indexed / peer reviewed*

1. Transition-Metal-Free Access to Pyridocarbazoles from 2-Alkynylindole-3-carbaldehydes via Azomethine Ylide" Verma, S.; Mishra, P.; Kumar, M.; Sur, S. and **Verma, A. K.*.** *J. Org. Chem.,* **2018**, 83, xx-xx (Just accepted) DOI: 10.1021/acs.joc.8b00980

2. Copper-catalyzed stereo- and chemoselective synthesis of enaminones via michael type addition, Patel, M.; Sushmita and **Verma, A. K.*** *J. Chem. Sci.* **2018** DOI: 10.1007/s12039-018-1465-9 (Invited article)

3. Base-Promoted Stereoselective Hydroalkoxylation of Alkynes Patel, M.; Sushmita, and **Verma, A. K.***I*nd. J. Het. Chem*. **2018**, 28, 107 (Invited article)

4. Regio- and Stereoselective Synthesis of Isoindolin-1-ones through BuLi-Mediated Iodoaminocyclization of 2-(1-

Alkynyl)benzamides, Brahmchari, D.; **Verma, A. K.** and Mehta, S. *J. Org. Chem*., **2018**, 83, 3339–3347

5. "Pd-Catalyzed One-Pot Sequential Cross-Coupling Reactions of Tetrabromothiophenes" Saini, K. M.; Saunthwal R. K. and **Verma, A. K.*** *Org. Biomol. Chem*., 2017, 15, 10289-10298

6. Chemoselective Oxidative Esterification and Iodocyclization of Hydroxyalkynyl Aldehydes. Kumar, S.; Patel, M.; Saunthwal, R. K. and **Verma, A. K.***Asian J. Org. Chem*. **2017**, 6, 1893–1902

7. Chemo-, Regio- and Stereoselective N-alkenylation of Pyrazoles/Benzpyrazoles using Activated and Unactivated Alkynes. Garg, V.; Kumar, P. and **Verma, A. K.*** *J. Org. Chem*., **2017**, 82, 10247–10262

8. Ag(I)-Catalyzed Cycloisomerization Reactions: Synthesis of Substituted Phenanthrenes and Naphthothiophenes, Saunthwal, R. K.; Danodia, A. K.; Saini, K. M. and **Verma, A. K.*** *Org. Biomol. Chem*., **2017**, 15, 6934-6942

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17. Metal-free regioselective tandem synthesis of diversely substituted benzimidazo-fused polyheterocycles in aqueous medium" Pawan K. Mishra and Akhilesh K. Verma,* *Green Chem*., **2016**, *18*, 6367-6372

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22. T.M. Rangarajan;* Kavita Devi, Akhilesh K. Verma; Rishi Pal Singh and Raj Pal Singh* 2016 A General and Efficient Pd-Catalyzed Rapid 2-Fluoroethoxylation of Bromo-Chalcones J. Fuorine Chem. **2016**, *186*, 101-110

23. Akhilesh K. Verma;* Rakesh K. Saunthwal and Monika Patel **2016** *"Metal and Protection-Free [4+2] Cycloadditions of Alkynes with azadienes: An Efficient Assembly of Functionalized Quinolines" Org. Lett*. **2016,** *18, 2200–2203*

24. Monika Patel, Rakesh K. Saunthwal, *Devendra K. Dhaked,* Prasad V. Bharatam and Akhilesh K. Verma* **2016** *"Metal-free Intermolecular Hydrophenoxylation of Aryl Alkynes" Asian J. Org. Chem*. **2016**, *5*, 213-221

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26. *Sonu Kumar, Carlos Cruz, Shilpi Pal, Rakesh K. Saunthwal,[†] Rakesh K. Tiwari, Eusebio Juaristi, and Akhilesh K. Verma* **2015** An Expedient Tandem Approach to Benzothieno, and Benzofuropyridines from o-Alkynyl Aldehydes via Silver-Catalyzed 6-endo-dig Ring Closure J. Org. Chem*. **2015**, 80, 10548–10560

27. Vibha Tandon; Urvashi; Pooja Yadav; Souvik Sur; Sheenu Abbat; Vinod Tiwari; Raymond Hewer; Maria Papathanasopoulos; Rameez Raja; Akhil Banerjea; Akhilesh K. Verma; Shrikant Kukreti; Prasad V. Bharatam **2015** *"1,2-Dihydroisoquinolines as HIV-1 Integrase Strand Transfer Inhibitors (INSTIs): Synthesis, Biological Evaluation and Molecular Modeling" ACS Medicinal Chemistry Letters,* **2015**, *6*, 1065–1070

28. Akhilesh K. Verma,* Abhinandan K. Danodia, Rakesh K. Saunthwal, Monika Patel, and Deepak Choudhary **2015** *"Palladium-Catalyzed Triple Successive C-H Functionalization: Direct Synthesis of Functionalized Carbazoles from Indoles" Org. Lett*. **2015,** *17*, 3658-3661 (Most Read Article)

29. Rajeev Ranjan Jha, Deepak Choudhary and Akhilesh K. Verma[*] **2015** *"(1H-benzo[d][1,2,3]triazol-1-yl)methanol: An Efficient Bidentate Ligand for Copper Catalyzed S-Arylation of Thiols" Ind. J. Het. Chem*. **2015**, 24, 451-458 (Invited R. S. Verma)

30. Monika Patel, Rakesh K. Saunthwal, *Devendra K. Dhaked,* Prasad V. Bharatam and Akhilesh K. Verma*** 2015** *"Nu-Addition vs S_NAr study: Chemo-, regio- and stereoselective preferential hydrothiolation of haloarylalkynes over S-arylation of aryl halides" Asian J. Org. Chem*. **2015**, 4,894 –898

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33. Rakesh K. Saunthwal, Monika Patel, Rakesh K. Tiwari, Keykavous Parang and Akhilesh K. Verma*** 2015** *On Water: Catalyst–free chemoselective synthesis of highly functionalized tetrahydroquinazolines from 2-aminophenylacrylate Green Chem.* **2015**, *17*, 1434-1441

34. Rakesh K. Saunthwal, Monika Patel, Sushil Kumar and Akhilesh K. Verma* **2015** *Cu(II)-catalyzed tandem synthesis of 2-imino[1,3]benzothiazines from 2-aminoaryl acrylates via thioamidation and concomitant chemoselective thia-*

Michael addition Tetrahedron Letters **2015,** *56*, 677–681

35. Rakesh K. Saunthwal, Monika Patel, Abhinandan K. Danodia, and Akhilesh K. Verma*** 2015** *Pd-catalyzed Heck-conjoined amidation and concomitant chemoselective Michael-addition: An efficient tandem approach to highly functionalized tetrahydroquinazolines from o-haloanilines Organic & Biomolecular Chemistry* **2015,***13*, 1521-1530

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37. Karkhelikar M.; Jha R.R.; Sridhar B.; Likhar P.; **Verma A. K. 2014** An Expedient Approach to Pyrrolo[3,2-c]quinolines via Regioselective Formation of Pyrrole Nucleus over Indoles *Chem. Commun. 50,* 8526-8528

38. Jha. R. R. Aggarwal T.; **Verma A K.*** 2014 Stereoselective tandem synthesis of oxazolo-fused pyrroloquinolines from o-alkynylaldehydes via Ag(I)-catalyzed regioselective 5-exo-dig ring closure *Tetrahedron Letters 55*, 2603-2608

39. Verma A. K.;* Patel M.; Joshi M.; Likhar P. R.; Tiwari R. K.; Parang K. **2014** Base-Mediated Chemo- and Stereoselective Addition of 5-Aminoindole/Tryptamine and Histamines onto Alkynes *J. Org. Chem*. 78, 6657–6669

40. Jha R. R.; Danodia A.; Kumar S.; Verma A. K.* **2014** Au (III)-catalyzed regio- and stereoselective tandem synthesis of oxazolo fused naphthyridines and isoquinolines from o-alkynylaldehydes *Tetrahedron Letters 55*, *610-615*

41. Patel M.; Saunthawal R.K.; **Verma A. K.* 2014** Base-catalysed stereoselective intermolecular addition of imidazoles onto alkynes: An easy access to imidazolyl enamines" *Tetrahedron Letters 55*, 1310-1315

42. Jha R.R.; Saunthwal R.R.; V**erma A. K.*** **2014** Stereoselective tandem synthesis of thiazolo fused naphthyridines and thienopyridines from o-alkynylaldehydes via Au(III)-catalyzed regioselective 6-endo-dig ring closure *Organic & Biomolecular Chemistry* 12, 552-556

43. ***Akhilesh Kumar Verma,**** *Rajeev Ranjan Jha, V. Kasi Sankar, Raj Pal Singh* Selective synthesis of 4,5-dihydroimidazo- and imidazo[1,5-a]quinoxalines via modified Pictet-Spengler reaction*" Tetrahedron Letters **2013***, 54, 5984-5990*

44. *Biomedical importance of indoles"* Kaushik, N. K., Kaushik, N., Attri, P., Kumar, N., Kim, C.H., Verma, A. K., Choi, E. H. *Molecules* 2013, *18*, 6620-6662

45. *Antibacterial and cytotoxic activities of diterpenoids isolated from Indian Plectranthus coesta"* Waldia, S., Kaushik, N., Verma, A. K., Joshi, B. C., Pathak, U., Joshi, M. C. *Records of Natural Products* 2013, 7, 355-358

46. **Verma A. K.;*** Choudhary D; Saunthwal R. K.; Rustagi V.; Patel M.; Tiwari R. K.; **2013** "On Water: Silver-Catalyzed Domino Approach for the Synthesis of Benzoxazine/Oxazine Fused Isoquinolines and Naphthyridines from ortho-Alkynylaldehydes" *J. Org. Chem***.** 78, 6657**–**6669.

47. **Verma A. K.;*** Kotla S. K. R.; Aggarwal A.; Kumar S.; Tiwari R. K. **2013** "Tandem Synthesis of Pyrroloacridones via [3 + 2] Alkyne Annulation/Ring Opening with Concomitant Intramolecular Aldol Condensation" *J. Org. Chem*. 78, 5372**–**5384.

48. **Verma A. K.;*** Kotla S. K. R.; Choudhary D; Patel M.; Tiwari R. K. **2013** "Silver-Catalyzed Tandem Synthesis of Naphthyridines and Thienopyridines via Three Component Reaction" *J. Org. Chem*. 78, 4386**–**4401.

49. **Verma A. K.;*** Jha R. R.; Chaudhary R.; Tiwari R. K.; Danodia A. **2013** "2-(1-Benzotriazolyl)pyridine: A Robust Bidentate Ligand for the Palladium-Catalyzed C**–**C, (Suzuki, Heck, Fujiwara-Moritani, Sonogashira), C**–**N and C**–**S Coupling Reactions" *Adv. Syn. Cat.* 355, 421-436.

50. Jha R. R.; Singh J. ; Tiwari R. K.; **Verma A. K.*** **2013**, "Benzotriazol-1-yl-ethanol: An Excellent Bidentate Ligand for the Copper/Palladium Catalyzed C-N and C-C Coupling Reaction" *ARKIVOC.* 228-248 (Manuscript No. RS-7559IP)

51. Shukla S. P.; Tiwari R. K.; **Verma A. K.* 2012**,"Palladium-Catalyzed Sonogashira-Coupling Conjoined C-H Activation: A Regioselective Tandem Strategy to Access Indolo-, and Pyrrolo[1,2-a]quinolines" *J. Org. Chem.* 77, 10382-10392

52. Kaushik N.K.; Mishra A.; Ali A.; Adhikari J.S.; **Verma A.K.;*** Gupta R. **2012** "Synthesis, characterization, and

antibacterial and anticancer screening of {M^{2+}-Co^{3+}-M^{2+}} and {Co^{3+}-M^{2+}} (M is Zn, Cd, Hg) heterometallic complexes" *Journal of Biological Inorganic Chemistry* 17, 1217–1230.

53. Aggarwal T.; Jha R. R.; Tiwari R. K.; Kumar S.; Kotla S. K. R.; Kumar S.; **Verma A. K.* 2012** "Palladium-Catalyzed Regioselective [3 + 2] Annulation of Internal Alkynes and Iodo-pyranoquinolines with Concomitant Ring Opening" *Org. Lett.* 14**,** 5184–5187.

54. Aggarwal T.; Kumar S.; Dhaked, D. K.; Tiwari R. K.; Bharatam P. V.; **Verma A. K.* 2012** "Site-Selective Electrophilic Cyclization and Subsequent Ring Opening: A Synthetic Route to Pyrrolo[1,2-a]quinolines and Indolizine"s" *J. Org. Chem.* 77, 8562–8573.

55. Shukla S. P.; Tiwari R. K.; **Verma A. K.* 2012** "Silver-Catalyzed Regioselective Synthesis of Acridines, Quinolines and Naphthalenes from 3-(2-alkynyl)aryl-β-ketoesters" *Tetrahedron* 68, 9035-9044

56. **Verma A. K.;*** Jha R. R.; Chaudhary R.; Tiwari R. K.; Kotla S. K. R.; Danodia A. **2012** "Copper-Catalyzed Tandem Synthesis of Indolo-, Pyrrolo[2,1-a]isoquinolines, Naphthyridines and Bisindolo/ Pyrrolo[2,1-a]isoquinolines via Hydroamination of ortho-Haloarylalkynes Followed by C-2 Arylation *J. Org. Chem.* 77, 8191–8205

57. **Verma A. K.* 2012** "Benzotriazole and its derivatives as ligands in coupling reaction" *Advances in Heterocyclic Chemistry* 107, 103-132

58. Joshi M.; Patel M.; Tiwari R.; **Verma A. K.* 2012** "Base-Mediated Selective Synthesis of Diversely Substituted N-Heterocyclic Enamines and Enaminones by the Hydroamination of Alkynes" *J. Org. Chem.* 77, 5633-5645

59. Rustagi V.; Tiwari R.; **Verma A. K.* 2012**, "Ag(I)-Catalyzed Cascade Strategy: A Regioselective Access to Diversely Substituted Fused Benzimidazo[2,1-a]isoquinolines, Naphthyridines, Thienopyridines and Quinoxalines in Water" *Eur. J. Org. Chem.* 4590-4602.

60. Joshi M.; Tiwari R. K.; **Verma A. K.* 2012** "Regioselective Preferential Nucleophilic Addition of N-Heterocycles onto Haloaryl-alkynes over N-Arylation of Aryl Halides" *Org. Lett.* 14**,** 1106-1109.

Conference Organization/ Presentations (in the last three years)

1. Organization of Conferences

a. Co-Convener (CBISNF 2004) International Conference on Chemistry Biology Interface: Synergistic New Frontiers 21-26 November 2004

b. Convener III Annual Frontiers of Biomedical Research 2004

c. Member of organizing committee of all the conferences/Seminars/Symposia organized by ACBR, Delhi University

2. Participation as Paper/Poster Presentation/Invited Lectures

Invited Lectures (abroad)

I. Verma A. K. **2016** "*Pd(II)-Catalyzed Regioselective Synthesis of Functionalize Carbazoles from Indoles/Styrylindoles via Triple/Double C-H Functionalization"* FLOHET-16, Feb. 28-2nd March 2016, University of Florida, Gainesville Florida, USA Gainesville, Florida, USA [Invited Talk]

II. Verma A. K. **2016** *"Hydroamination and Electrophilic Cyclization: Modern Tool for the Synthesis of Heterocycles, Natural Products-like and π-Conjugated Scaffolds from Alkynes*" 2nd March, 2016, Department of Chemistry, Queens College, New York, USA. [Invited Talk]

III. Verma A. K. **2015** *"Indole Directed C-H Activation: Direct Synthesis of Functionalized Carbazoles from Indoles via Triple C-H Activation"* 23-28 August 2015, University of California, Santa Barbara, CA, USA [Invited Talk]

IV. Verma A. K. **2016** "*Heterocycles via C-H Activation and Electrophilic Cyclization"* 4th March 2016, Department of Chemistry, IPN, Mexico City, Mexico. [Invited Talk]

V. Verma A. K. **2016** *"Regioselective Synthesis of Functionalized Carbazoles from Indoles via Triple/Double C-H Functionalization*" 3rd March 2016, Department of Chemistry, CINVISTAV, Mexico City, Mexico. [Invited Talk]

VI. Verma A. K. **2015** *"Hydroamination of Alkynes and Triple Successive Oxidative Heck: A Modern Tool for the Construction of Small Nitrogen Heterocycles"* 7-11 May 2015, 22nd Grasmere Heterocyclic Symposium, Grasmere, UK (Nominated by **NOST, India)** [Invited Talk]

VII. Verma A. K. **2014** "*Electrophilic Cyclization: A Modern Tool for the Synthesis of Heterocyclic, Natural Products-like and π-Conjugated Scaffolds from Alkynes"* 10th March 2014 at Department of Chemistry, CINVISTAV, IPN. Mexico City, Mexico. [Invited Talk]

VIII. Verma A. K. **2014** "*Electrophilic Cyclization / Alkyne Annulation: Modern Tool for the Synthesis of Heterocyclic, Natural Products-like and π-Conjugated Scaffolds from Alkynes"* 6th March 2014 at Department of Experimental and Clinical Pharmacology, University of Minnesota, Minneapolis, MN, USA [Invited Talk]

IX. Verma A. K. **2016** "*Electrophilic Cyclization / [3+2] Alkyne Annulation: A Modern Tool for the Tandem Synthesis of Heterocyclic Molecules of Pharmaceutical Interest"* FLOHET-14, 2-5th March 2014, University of Florida, Gainesville Florida, USA

X. Verma A. K. **2013. CINVISTAV, Mexico City, Mexico:** "*Electrophilic Cyclization: A Modern Tool for the Synthesis of Heterocyclic, Natural Products-like and π-Conjugated Scaffolds from Alkynes"* 10th March 2014 at Department of Chemistry, CINVISTAV, IPN. Mexico City, Mexico. [Invited Talk]

XI. Verma A. K. **2013. University of Minnesota, Minneapolis, USA:** "*Electrophilic Cyclization / Alkyne Annulation: Modern Tool for the Synthesis of Heterocyclic, Natural Products-like and π-Conjugated Scaffolds from Alkynes"* 6th March 2014 at Department of Experimental and Clinical Pharmacology, University of Minnesota, Minneapolis, MN, USA [Invited Talk]

XII. Verma A. K. **2013. Gainesville, Florida, USA:** "*Electrophilic Cyclization / [3+2] Alkyne Annulation: A Modern Tool for the Tandem Synthesis of Heterocyclic Molecules of Pharmaceutical Interest"* FLOHET-14, 2-5th March 2014, University of Florida, Gainesville Florida, USA [Invited Talk]

XIII. Verma A. K. **2013. "**Alkyne Annulation/ Electrophilic Cyclization: A Modern Tool for the Construction of Small Heterocycles and Natural Products-like Scaffolds" 19th to 23rd August 2013 organized by Asian Chemical Congress ay Singapore. 15th Asian Chemical Congress. [Invited Talk].

XIV. Verma A. K. **2012. "**Electrophilic Cyclization of Alkynes: A Modern Tool for the Synthesis of Small Heterocyclic Molecules of Pharmaceutical Interest" 2nd March 2012, Department of Organic and Bioorganic Chemistry, George August University, **Goettingen, Germany.** [Invited Talk].

XV. Verma A. K. **2012. "**New Strategies for the Synthesis of Fused Heterocycles, Natural Products-like and π-Conjugated Scaffolds by the Electrophilic Cyclization of Alkynes"FLOHET-13, 4-7th March 2012, **Gainesville Florida, USA.** [Invited Talk].

XVI. Verma A. K. **2012.** *"Metal-Catalyzed Electrophilic Cyclization of Alkynes: A Versatile Tool for the Synthesis of Small Heterocycles, Natural-Product Like and π-Conjugated Scaffolds"* **8th** March 2012, Department of Chemistry and Biomedical Sciences, **University of Rhode Island, Kingston, USA.** [Invited Talk].

XVII. Verma A. K. **2012.** "*Electrophilic Cyclization of Alkynes: A Modern Tool for the Synthesis of Small Heterocyclic Molecules of Pharmaceutical Interest"* Frontiers in Pharmaceutical Sciences: Global Perspectives, September 28 - September 30, 2012, Organized by the College of Pharmacy, University of Rhode Island, **Kingston, USA..** [Invited Talk].

XVIII. Verma A. K. **2011. "**Synthesis of Nitrogen and Oxygen Heterocycles by the Regioselective Electrophilic Cyclization of Alkynes" 31st July to 4th August 2011 organized by **ICHC at Glasgow, UK.** "23rd International Congress on Heterocyclic Chemistry" [Invited Talk].

Lectures/Symposia/Conferences in India

1. Verma A. K. **2018.** "*Base-Mediated and Protection Free [4+2] Cycloadditions of Alkynes with Azadienes: An Efficient Assembly of Functionalized Quinolines"* ***CONIAPS-XXII, 13-15th April 2018*** *organized by the Dr. Ram Manohar Lohia Avadh University, Faizabad, UP*

1. Verma A. K. **2018**. *""Adventure with Alkynes" Modern Tool for the Construction of Small Heterocyclic Molecules, Natural Products-like and π-Conjugated Scaffolds from Alkynes"* ***Dr. Reddys. Laboratory****, 28/24/2018, Hyderabad,*

2. Verma A. K. **2017**. "*Adventure with Alkynes: Modern Tool for the Construction of Small Heterocyclic Molecules Natural Products-Like and π-Conjugated Scaffolds from Alkynes" **Indo-Hungarian Symposium**, 11/12/2017 organized by Miranda House, University of Delhi,*

3. Verma A. K. **2016**. *Palladium-Catalyzed Regioselective Synthesis of Functionalized Carbazoles from Indoles via Triple and Double C-H Functionalization"* Akhilesh Kumar Verma, NDCS 2016, BITS, Pilani, 16-18 October 2015, Organized by Department of Chemistry, BITS, Pilani, Rajasthan.

4. Verma A. K. **2016.** *"Regiocontrolled Electrophilic Cyclization: A Novel Approach for the Synthesis of Pyrrolo[3,2-c]quinolines (Core Nucleus of Natural Product Martinellic Acid")* **Akhilesh Kumar Verma** 20-22nd Nov. **2014.** 4th **Biennial International Conference on DDNPTM** organized by NIPER Mohali. [Invited Talk].

5. Verma A. K. **2013.** *"Palladium-Catalyzed Direct Synthesis of Functionalized Carbazoles from Indoles via Triple Successive Oxidative Heck (Fujiwara-Moritani")* **Akhilesh Kumar Verma** 9-12th Nov 2014, **Indo-French Conference on Organic Synthesis**, Puducherry, India. [Invited Talk].

6. Verma A. K. **2013.** *"Regio- and Stereoselective Preferential Hydroamination, Hydrothiophen-oxylation and Hydrophenoxylation of Haloarylalkynes over N, S- and O-Arylation of Aryl Halides: A Mechanistic Insight"* **Akhilesh Kumar Verma,** 9-11 October 2014, **Transcending Frontiers in Organic Chemistry** (TFOC 2014), Organised by NIIST, Trivandrum, India. [Invited Talk].

7. Verma A. K. **2013.** *"Electrophilic Cyclization/ Alkyne Annulation : Modern Tool for the Construction of Small Heterocycles, Natural Products-like and π-Conjugated Scaffolds from Alkynes"* 27th August 2013, **"A Symposium on Diversity Oriented Heterocyclic Synthesis"** Organized by the Syngenta Biosciences, Goa. [Invited Talk]

8. Verma A. K. **2013.** *"O*-Haloaryl Alkynes/*O*-Alkynylaldehydes: Versatile Synthones for the Construction of Small Heterocycles and Natural Products-like Scaffolds" January 21st -23rd, **2013**. Emerging Trends in Development of Drugs and Devices jointly organized by the Department of Chemistry, University of Delhi and three National Science Academies of India.

9. Verma A. K. **2012.** "Hydroamination and Electrophilic Cyclization of Alkynes: A Versatile Tool for the Regioselective Synthesis of Fused Heterocyclic Scaffolds" 2-4th August **2012**, "Chemistry and Chemical Biology of Natural Products" organized by the Indian Institute of Chemical Technology (IICT), Hyderabad. [Invited Talk].

10. Verma A. K. **2012.** "Electrophilic Cyclization of Alkynes: A Modern Tool for the Synthesis of Heterocyclic Molecules, Natural Products-like and π-Conjugated Scaffolds" 20th March **2012**, National Seminar on "Emerging Trends in Chemical Sciences" organized by School of Chemical Sciences, Devi Ahilya University, Indore [Invited Talk].

11. Verma A. K. **2011.** "Metal-Catalyzed Electrophilic Cyclization of Alkynes: A Versatile Tool for the Synthesis of Heterocycles" 23rd to 24th December **2011** National Symposium in Chemistry in 21st Century, organized by the Department of Chemistry, Guru Nanak Dev University, Amritsar. [Invited Talk].

12. Verma A. K. **2011.** "Synthetic Approaches Towards Small Heterocyclic Molecules, Natural Products-like and π-Conjugated Compounds by the Electrophilic Cyclization of Alkynes" 14th to 15th October **2011**, SMNP 2011, Organized by Department of Chemistry, Annamalai University, Tamilnadu [Invited Talk].

13. Verma A. K. **2011.** "Novel Synthetic Approaches Towards Heterocyclic Molecules, Natural Products-like and π-Conjugated Scaffolds by the Electrophilic Cyclization of Alkynes" 7-9 December 2011. 7th Indo-French Conference in Organic Synthesis Organized by National Chemical Laboratory (CSIR), Pune [Invited Talk].

14. Verma A. K. **2011. "**Synthetic approaches towards small heteroctclic molecules, natural products-like and π-conjugated compounds by electrophilic cyclization of alkynes" 22nd to 25th September **2011.** CRSI North zone meeting, Organized by CRSI at Jammu, UK. [Invited Talk].

15. Verma A. K. **2011.** "Synthesis of biologically important fused heterocycles by annulations and electrophilic cyclization of alkynes" 3-5th March **2011** organized by CDRI – NIPER (RBL) at CDRI LUCKNOW [Invited Talk].

16. Verma A. K. **2011**. "Copper-Catalyzed Regioselective Tandem Synthesis of Fused-Heterocycles by the Preferential

Addition of N-Heterocycles on *ortho*-haloalkynes followed by Intramolecular C-2 Arylation" RASC 10-12th February. 2011, Dibrugarh, India. [Invited Talk].

17. Verma A. K. **2011**. Tandem Synthesis of Indolo, Pyrrolo[2,1-a]isoquinolines, Naphthyridines, Pyranoquinolines, Pyranoquinolinones and Isocumarins by the Electrophilic Cyclization of Alkynes" 4-7 February. 2011 organized by ISCB, Rajkot, India. [Invited Talk].
18. Verma A. K. **2010.** "Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-*a*]isoquinolines: A Direct Approach to Alkaloids, Cryptaustoline and Cryptowpline Nucleus" DDNPTM conference 20-24th Nov. 2010 organized by NIPER Mohali. [Invited Talk].
19. Verma A. K. **2010**. Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-*a*]isoquinolines: A Direct Approach to Alkaloids, Cryptaustoline and Cryptowpline Nucleus 05-08th December 2010 organized by National Organic Symposium Trust (NOST) at Goa. [Invited Talk]
20. Verma A. K. **2010.** Metal-catalyzed regioselective tandem synthesis of indolo, pyrrolo[2,1-a]isoquinolines and naphthyridines. 23rd June 2010 in the Department of Chemistry, Vikram University Ujjain, M.P. [Invited Talk]
21. Verma A. K. **2010.** Copper-Catalyzed Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines: A Direct Approach to Dibenzopyrrocoline Alkaloids, Cryptaustoline and Cryptowpline 12-13 May 2010 "National seminar on current trends in Chemistry", Organized by the Department of Chemistry, APS University Rewa, M.P. [Invited Talk]
22. Verma A. K. **2010.** Copper-Catalyzed Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines and Identification of Synthesize Regioisomers by X-Ray Crystallographic Analysis. 12-14 April 2010 "Recent Advances in Analytical Sciences, , organized by the Department of Chemistry, University of Himanchal Pradesh, Shimla (India). [Invited Talk]
23. Verma A. K. **2010.** "Copper-Catalyzed Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines: A Direct Approach to Dibenzopyrrocoline Alkaloids, Cryptaustoline and Cryptowpline" 17-21st Feb. "CTDDR-2010, Organized by the Central Drug Research Institute, (CDRI) Lucknow (India) [Invited Talk].
24. Verma A. K. **2010.** Regioselective Tandem Synthesis of Fused Polyheterocycles: A Direct Approach To Dibenzopyrrocoline Alkaloids" 5-8th January 2010. International conference "T3D-2010, Organized by the Department of Chemistry, University of Delhi, Delhi, India. [Invited Talk]
25. Verma A. K. and Chaudhary R. **2009.** Regioselective Tandem Synthesis of Polyheterocycles by the Copper-Catalyzed Preferential addition of *N*-Heterocycles on *ortho*-haloalkynes followed by Intramolecular Arylation. Presented poster at 11th CRSI National Symposium in Chemistry and 3rd CRSI-RSC Symposium. 6-8th Feb. 2009 at National Chemical Laboratory, Pune
26. Verma A. K.; Chaudhary R.; Singh J.; Larock R. C.; **2009.** Regioselective tandem synthesis of polyheterocycles by the copper-catalyzed preferential addition of n-heterocycles on *ortho*-haloalkynes followed by intramolecular arylation" Presented Poster at International Conference "TENTH TETRAHEDRON SYMPOSIUM, 23rd to 26th June 2009 at Paris, France.
27. Verma A. K.; Kesherwani T.; J. Singh.; V. Tandon.; Larock R.C. **2008**. Synthesis of polycyclic heteroaromatics by copper-catalyzed tandem amination and intramolecular electrophilic cyclization. Paper presented in International Conference "236th ACS National Meeting, 17-21st August, Philadelphia, PA, USA. [Oral talk]
28. Kesherwani T.; Verma A. K.; Emrich D.; Larock R. C. **2008;** Studies in aryl to acyl migration "through space" palladium migration. Presented Poster in International Conference "236th ACS National Meeting, 17-21st August 2008, Philadelphia, PA, USA)
29. Verma A. K. **2007** Participated in International Conference "42nd ACS Midwest Regional Meeting, 7-10 Nov. 2007, 5100, Rockhills Road, Kansas City, MO)
30. Verma A. K. **2007** Attri P.; Chopra V.; Kaushik N. K.; Singh R. P.; Chandra R. Green synthesis: TEAA catalyzed

synthesis of 1,2,3,4-tetrahydropytazino[l,2-a]indoles. Presented Poster in 3rd Indo-Italian Workshop on Chemistry and Biology of Antioxidants, organized by CSIR, Embassy of Italy and Dept. of Chemistry, Univ. of Delhi.)

Research Projects (Major Grants/Research Collaboration)

- **Title of the Project: "Metal and Protection-free Hydroamination of Nucleobases and N-heterocycles".** Funding agency: SERB, DST; Amount: 27.0 Lakhs; Duration: Three year (2017-2019).

- **Title of the Project:** "Design of novel approaches for the synthesis of symmetrically/unsymmetrically substituted Arenes/hetero Arenes and synthesis of heterocyclic/carbocyclic compounds by sequential coupling reaction"Funding agency: SERB, DST; Amount: 55.0 Lakhs; Duration: Three year (2015-2018)

- **Title of the Project:** "Transition-Metal-Catalyzed Double C-H Activation: Synthesis of Novel Heterocyclic Scaffolds from Unactivated Arenes"Funding agency: SERB, DST; Amount: 44.4 Lakhs Duration: Three year (2014-2017)

- **Title of the Project:** "Synthesis of Diversely Substituted Indoles by The Electrophilic Cyclization and Cu/Pd-catalyzed Coupling Reactions: Potential Anticancer Small Molecules" Funding agency: DST, Amount: **29.8 Lakhs** , Duration: Three year (2012-2014)

- **Title of the Project:** Design of Novel Diversity Oriented Synthetic Strategy (DOS) for the Regioselective Tandem Synthesis of Fused N-, O- and S-heterocycles (natural products like and π- conjugated) by the Electrophilic Cyclization of Alkynes" Funding agency: DST, Amount: **44.3 Lakhs** , Duration: Three year (2010-12)

- **Title of the project:** Studies on Regioselective Tandem Synthesis of Fused-Isoquinolines and Naphthyridines by the Copper-Catalyzed Preferential Addition of N-Heterocycles on Ortho-haloarylalkynes followed by Arylation Funding agency: CSIR, Amount: **20.3 Lakhs** , Duration: Three year (2011-2013)

- **Title of the Project: "**Design and Synthesis of New class of DNA intercalating agents", Funding agency: Delhi University (PURSE Grant) , Amount: **29.0 Lakhs** , Duration: Three year (2009-2010)

- **Title of the Project**: "Design Synthesis and antibacterial studies of novel 1,2,3,4-tetrahydropyrazino[1,2-a]indoles on resistant bacterial strains", Funding agency: DST, Amount: ~**20.0 Lakhs**, Duration: Two year (2009-10)

- **Title of the Project**: "Design of Tandem and selective synthesis of α-fused polycyclic quinoxalines", Funding agency: UGC, Amount: **8.84 Lakhs**, Duration: Three year (2009-2010)

- **Title of the Project**: "An Efficient Assembly of Heterobenzazep ines and tetrahydropyrazino indoles ring system by intramolecular cyclization by benzotriazole methodology", Funding agency: DST, Amount: **12 Lakhs**, Duration: Three year (2003-2006)

- **Title of the Project:** "Green & Environment Friendly approach for the construction of potential heterocycles", Funding agency: DRDO, Amount: **14.4 Lakhs**, Duration: Two year (2006-2008)

Awards and Distinctions

Honors / awards

- GUC Mid-career Award, **2018**
- Member of Expert Committee of Chem. Sciences, SERB-YS-DST. (2015-2018)
- Awarded Senior INSA visiting fellowship for the year 2014, to visit **Prof. Carsten Bolm**, Institute of Organic Chemistry RWTH Aachen University, Germany under bilateral exchange program of Indian
- Eli Lilly and Company Asia **Outstanding Thesis Award** to Ph.D Student Trapti Aggarwal (First Prize of 1500 USD)
  Note: First student from ***Delhi University***
- Professor A. S. R. Anjaneyulu 60th Birthday Commemoration Award for the year 2012 by Indian Chemical Society.
- Awarded **BOYSCAST Fellowship** for one year (2007-2008) in the laboratory of **Prof. R. C. Larock** at Iowa State University of Science and Technology, Ames, Iowa, USA for the advance research.
- Awarded Post Doctoral Fellowship by the Dept. of Chemistry, University of Florida, Gainesville, USA, for one year (Jan 2001-Dec. 2001) in the Laboratory of **Prof. Alan R. Katritzky.**
- Awarded Post Doctoral Research Associate fellowship by the Dept. of Chemistry, University of Florida, Gainesville, USA, for one year (Jan 2001-Dec. 2001) in the Laboratory of **Prof. Alan R. Katritzky.**
- Member Indian Delegation Team for Indo-Mexican Joint Cooperation in Science and Technology Committee **2011**
- Member Indian Delegation Team for India-Cuba Joint Cooperation in Science and Technology Committee **2011**
- Invited by National Organic Symposium Trust **(NOST)** for a talk in NOST XIV Organic Chemistry Conference (Will be held in Goa between December 5-8, 2010)
- Invited by Editor of **Wiley-Blackwell** for the Co-author ship for editing the 3rd Revision of Comprehensive Organic Transformation (COT-III)
- Invited for writing a book Chapter in the *Advances in Heterocyclic Chemistry*

Fellowships / Distinctions

- **1996-1998**: CSIR-JRF (Chemical Sciences)
- **1996**: ARS Scientist Selection (ASRB, ICAR)
- **1996**: ARS NET Organic Chemistry

- **Reviewing following Journals**
  - *Chemical Reviews* (ACS)
  - *Acc. Chem. Res.*
  - *Chem. Commun.*
  - *Adv. Syn. Catalysis*
  - *Org. Lett.*
  - *Tetrahedron Letters.*
  - *J. Org. Chem. (ACS)*
  - *SYNN LETT*
  - *Chemistry: An Asian Journal*
  - *Org. Bioorganic Chemistry*
  - *Synthetic Communication*
  - *Bioorganic & Medicinal Chemistry*
  - *European Journal of Medicinal Chemistry*
  - *Archive Pharma*
  - *Heterocycles*

Association With Professional Bodies

Membership

- Life Member-Chemical Research Society of India (CRSI)
- Member**- American Chemical Society**, USA
- Member- **Indian Chemical Society**, India

- Life Member- **Indian Society of Analytical Scientists**

Committees/ Board Members

Member of various selection committee/Governing body/Bill Committee/Purchase Committee/Construction committee of ACBR during 1998-2009

Major Accomplishment

- We have developed a novel strategy for the tandem synthesis of indolo- and pyrrolo[2,1-*a*]isoquinolines (core nucleus of natural product, **Cryptaustoline** and **Cryptowoline**) from *o*-haloarylalkynes by the ***preferential addition of indoles and pyrroles onto the o-haloarylalkynes over N-arylation of the aryl halide.*** We have successfully extended the scope of the developed chemistry for the direct synthesis of **Naphthyridines** and bisindolo[2,1-*a*]isoquinolines, a regioisomer of bisindolo[2,1-*a*]quinolines used as single-crystal field-effect transistor.

- We have introduced another interesting novel chemistry for the synthesis of pharmaceutically important, highly functionalized pyrrolo[1,2-*a*]quinolines by the palladium-catalyzed [3+2] annulation of iodo-pyranoquinolines and internal alkynes with subsequent ring opening. This chemistry was successfully extended for the synthesis of pyrrolo-acridinone via [3+2] annulations/ring opening and successive intramolecular cross-aldol condensation.

- We have developed a novel cascade strategy for the "**Diversity Oriented Synthesis (DOS) of Over Hundred Heterocyclic /Natural-Product-Likes and π-Conjugated Scaffolds**" from *ortho*-akynyaldehydes. The mechanism of the designed reaction is established by the spectroscopic and X-Ray crystallographic studies of the isolated intermediates and the final product.

- Iodine-Catalyzed and Solvent Controlled ***Selective Electrophilic Cyclization and Oxidative Esterification of ortho-alkynyl Aldehydes***: An Easy Access to Pyranoquinolines, Pyranoquinolinones and Isocumarins. This is another interesting and practically useful novel chemistry being developed in our laboratory. This developed process provides a novel access for the chemoselective synthesis of esters from aldehydes without oxidizing/affecting the primary alcoholic and alkyne group present in the substrates. Process is a useful addition in the organic functional group transformations where protection and deprotection is required.

- **Novel property of benzotriazole and its derivatives**: We had identified the new role of inexpensive and thermally stable compound ***benzotriazole*** as an inexpensive and efficient ligand in Copper-Catalyzed C-N (N-arylation), C-S (S-arylation) coupling reaction. In continuation of designing of benzotriazole based ligands for the coupling reactions, we have designed **BtPy** (**L4**) as a robust (air stable, phosphine free) ligand which efficiently catalyzed the Suzuki, Heck, Oxidative-Heck, Sonogashira, Buchwald-Hartwig (C–N), and C–S coupling reactions.

- **Significant recent publications as corresponding author**
- J. Org. Chem. 2018, 83, XX–XX (I.F. ~4.85)
- J. Org. Chem. 2018, 83, 3339–3347 (I.F. ~4.85)
- Acc. Chem. Res. 2017, 50 (2), pp 240–254 (I.F. ~22.0)
- J. Org. Chem. 2017, 82, 10247–10262 (I.F. ~4.85)
- J. Org. Chem. 2017, 82, 6388–6397 (I.F. ~4.85)
- J. Org. Chem. 2016 81, 9912–9923 (I.F. ~4.85)
- J. Org. Chem. 2016, 81, 9356–9371 (I.F. ~4.85)
- Green Chem., 2016, 18, 6367-6372 (I.F. ~9.12)
- Chem. Asian J. 2016, 11, 3001–3007 (I.F. ~4.59)
- J. Org. Chem. 2016, 81, 6563-6572 (I.F. ~4.85)
- Org. Lett. 2016, 18, 2200–2203 (I.F. ~6.56)
- Org. Biomol. Chem., 2016, 14, 7639-7653 (I.F. ~3.56)
- Org. Biomol. Chem.,2016, 14, 6487-6496 (I.F. ~3.56)
- Chem. Eur. J. 2015, 21, 18601–18605 (I.F. ~5.30)
- J. Org. Chem. 2015, 80, 10548–10560 (I.F. ~4.85)
- Org. Lett. 2015, 17, 3658-3661 (Most read article) (I.F. ~6.56)
- Green Chemistry 2015, 17, 1434-1441 (I.F. ~9.12)
- Org. Biomol. Chem. 2015,13, 1521-1530 (I.F. ~3.56)
- Chem. Commun. 2014, 50, 8526-8528 (I.F. ~6.70)

- J. Org. Chem. 2014, 78, 6657–6669 (I.F. ~4.85)
- Org. Biomol. Chem. 2014, 12, 552-556 (I.F. ~3.48)
- Tetrahedron Letters 2014, 55, 610-615 (I.F. ~2.40)
- J. Org. Chem. 2013, 78 6657–6669 (I.F. ~4.85)
- J. Org. Chem. 2013, 78, 5372–5384 (I.F. ~4.85)
- J. Org. Chem. 2013, 78, 4386–4401 (I.F. ~4.85)
- Adv. Syn. Cat. 2013, 355,421-438 (I.F. ~5.52)
- J. Org. Chem. 2012, 77 10382-10392 (I.F. ~4.85)
- Org. Lett. 2012, 14, 5184–5187. (I.F. ~6.56)
- J. Org. Chem. 2012, 77, 8562–8573 (I.F. ~4.85)
- J. Org. Chem. 2012, 77, 8191–8205 (I.F. ~4.85)
- J. Org. Chem. 2012, 77, 5633-5645 (I.F. ~4.85)
- Org. Lett. 2012, 14, 1106-1109. (I.F. ~6.56)
- Eur. J. Org. Chem. 2012, 4590-4602 (I.F. ~3.30)
- Org. Lett. 2011, 13, 1630-1633 (I.F. ~6.56)
  (First ever paper published from Delhi University as corresponding author)
- J. Org. Chem. 2011, 76, 5670-5684 (I.F. ~4.85)
  Highlighted in SYNFACTS 2011, 9, 0951-0951
- Green Chem. 2011, 13, 1640-1643 (I.F. ~9.12)
- ACS Comb. Sci. 2011, 13, 530-536 (I.F. ~3.32)
- Eur. J. Org. Chem. 2011, 76, 6998-7010 (I.F. ~3.30)
- Chemm. Commun, 2010, 46, 4064-4066 (I.F. ~6.70)
- J. Org. Chem. 2010, 75, 7691-7703 (I.F. ~4.85)
- (Top ten most read article)
- Angew. Chem Int. Ed. 2009, 48, 1138-1143 (I.F. ~11.99)
  (First ever paper published from Delhi University as corresponding author)
- Highlighted in SYNFACTS 2009, 4, 0434-0434
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Five most cited publication as corresponding author

- Angew. Chem Int. Ed. 2009, 48, 1138-1143 (>161 citations)
- Tetrahedron Letters, 2007, 48, 4207-4210. (>134 citations)
- Tetrahedron Letters, 2007, 48, 7199-7202. (>110 citations)
- Molecules 2013, 18, 6620-6662 (>382 citations)
- Bioorg & Med. Chem, 2006, 14, 1819-1826 (>143 citations)

No. of Ph.D. Guided : Twenty five (25) one as a co-supervisor

Total Publications : > 98

Last 5 Year public **:** > 53

Average I. F. **:** > 4.0

Total Citation: **:** > 2600

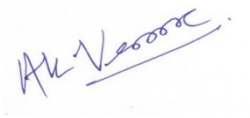
***h* index:** **:** 32

Achievements of Students

- **Monika Patel**: Has been awarded prestigious 67th lindau nobel laureate meeting, Germany- 2017
- ***Pawan K. Mishra*** *: Best Poster award*-2017-J-NOST, CDRI Lucknow
- **Kapil Mohan Saini**: Has been selected Best Poster award In NIPER, Mohali-2016.
- **Kapil Mohan Saini:** Young Scientist Award, Best Poster Award by Indian Chemical society-2016.
- **Vineeta Garg**: Has been selected Best Poster Award on 4th Biennial International Conference of New Developments in Drug Discovery from Natural Products and Traditional Medicine-2014
- **Deepak Kumar**: Has been selected Young Scientist Award (Dr. J. M. Dasgupta Award), CONACYT Fellowship by Mexican government, Best Poster award in "International Symposium on Drug Development for Orphan/Neglected Diseases" Organized by CDRI, Lucknow,
- **Sonu Kumar:** Has been selected Best Poster Award (by Indian Chemical society)
- **Monika Patel**: Has been awarded Best Poster Presentation in conference 19th CRSI-2016 2) Dr. B. N. Mankad Award (by

Indian Chemical society) 3) Best Poster Presentation in conference TFOC-2014

- **Rakesh K. Saunthwal**: Has been awarded "Young Scientist Award (Dr. B. N. Mankad Award by Indian Chemical society"-2015.
- ***Trapti Aggarwal:*** Has been selected for the world **Nobel Laureates Meet at Lindau, Germany** 2013 (**First Student from the Department of Chemistry, Univ. of Delhi**).
- ***Megha Joshi:*** Has been awarded prestigious "Erasmus Mundus" fellowship for the advanced research in **Germany**.
- ***Satya Prakash Shukla:*** Has been Pre-Selected for the prestigious EXPERTS III scholarship for the postdoctoral research at KU Leuven, **Belgium**.
- ***Vineeta Rustagi:*** Has been Pre-Selected for the prestigious EXPERTS III scholarship for the postdoctoral research at **Belgium**.
- ***Megha Joshi:*** Invited for the oral presentation for the ICHC 2011 at **Glasgow, UK.**
- Following Students have been Selected for the Prestigious "Junior National Organic Symposium Trust" Lectures:
- ***Trapti Aggarwal:*** 2010-J-NOST, Hyderabad
- ***Satya Prakash Shukla:*** 2011-J-NOST, IISER Mohali, Chandigarh.
- ***Megha Joshi:*** 2012-J-NOST, IIT, Guwahati



Signature of Faculty Member

- You are also requested to also give your complete resume as a DOC or PDF file to be attached as a link on your faculty page.