

Curriculum Vitae

Akhilesh K. Verma, FNA, FRSC

(Professor, Organic Chemistry)

Room No 115, Block B

Department of Chemistry, University of Delhi,
Delhi-110007, India.

Senior Fellow, Institution of Eminence (IoE); University of
Delhi

Tel.: 91-11-27666646 (Ext.175), 09717831262

E-mail: averma@acbr.du.ac.in, akhilesh682000@gmail.com

Web page: www.akvresearch.com



Personal Information

Office Address: Room No. 115, Block B
Department of Chemistry, North Campus
University of Delhi,
Delhi-110007, India

Date of Birth 1st September 1968

Residence Address: A-4, Arya Apartment Sector 15,
Rohini, New Delhi-110089
Phone: 01127298955

Qualifications: Ph. D (Chemistry), Department of Chemistry, University of Delhi, India
Year: 2000

M.Sc. (Organic Chemistry), Bipin Bihari P.G. College Jhansi (U.P.)

NET: CSIR-JRF (Chemical Sciences-1996),

ICAR-NET (Organic-Chemistry 1996)

Teaching Experience: Over 23 Years (Post Graduate Level)

Research Experience: Over 21 Years

Academic

Professor: 29th March 2013-Till date

Department of Chemistry, University of Delhi, Delhi, India

Professor: 21st January 2015-18th November 2015 (on Lien from DU)

School of Physical Sciences, Jawaharlal Nehru University, Delhi, India

Associate Professor: 29th March 2010-28th March 2013

Department of Chemistry, University of Delhi, Delhi, India

Reader (Associate Professor): 23rd Jan 2009-29th March 2010

Department of Chemistry, University of Delhi, Delhi, India

Lecturer (Assistant Professor): Feb 1998-Jan 2009

Dr. B. R. Ambedkar Center for Biomedical Research, Univ. of Delhi,

Postdoctoral Research

Visiting Scientist: June 28th 2007-31st August 2008

Iowa State University of Science and Technology, Ames, Iowa, USA, under
Supervision of **Prof. Richard C. Larock**

Postdoctoral Research Associate: Jan. 2002-December 2002

University of Florida, Gainesville, USA, (Mentor: **Prof. Alan R. Katritzky**)

Postdoctoral Fellow: Jan. 2001-December 2001

University of Florida, Gainesville, FL, USA (Mentor: **Prof. Alan R. Katritzky**)

Administrative Contribution:

- **Chairman**, Governing Body, Ramjas College, Univ. of Delhi (Two Years: March 2019-March 2021)
- Chairman/Coordinator of Delhi University Central Admissions Grievances Redressal Committee (2015-2018/2019)
- Core Committee Member Delhi University Admissions (2015-18)
- Admission In-Charge of M.Sc. of Department of Chemistry
- Admission In-Charge of Ph.D. Admission of Department of Chemistry
- NAAC coordinator Department of Chemistry
- Members of various selection Committees of University/IIT's/NIT's
(1. Screening/ appointment of Principal in DU Colleges
(2. Appointment of Assistant/Associate/Professor)

Areas of Interest:

- **Superbase-Promoted/catalyzed Organic Transformation:** i. Chemoselective hydroamination/hydrothiolation and hydroxylation of alkynes. ii Synthesis of small organic molecules from alkynes
- **Transition-Metal Catalyzed Organic Transformation:** Activation/functionalization of C-H bond, triple and double C-H activation.
- **Application of Mass-Spectrometry:** Capturing fleeting reaction intermediates and identification of reaction path using online mass-spectrometry
- **Medicinal Chemistry:** i. Design and development of pharmaceutically important small molecules. ii. Construction of deuterated molecules

Honors / awards

- **2021:** Elected Fellow, Indian National Science Academy (INSA)
- **2021:** Bronze Medal, Chemical Research Society of India (CRSI)
- **2021:** Fellow Royal Society of Chemistry (FRSC)
- **2021:** Senior Fellow, Institution of Eminence (IoE); University of Delhi
- **2021:** Expert Member, SERB-Organic PAC (2021-2023)
- **2020:** Expert Member, SERB-TETRA (Chemical Sciences)
- **2020:** Expert Member, SERB-POWER (Chemical Sciences)
- **2020:** Expert Member, SERB-STAR (Chemical Sciences)
- **2020:** Expert Member, PMRF (Chemical Sciences)
- **2019:** Member Governing Body, CCRUM, Ministry of AYUSH
- **2017:** UGC Mid Career Award
- **2015:** Expert Member SERB-YS/NPDF Chemical Sciences (2015-2018)
- **2014:** **Scientist-In-charge of Indian Chemical Society** (Organic Chemistry and Biochemistry Section) for year **2014-2016**
- **2014:** Awarded Senior INSA visiting fellowship for the year 2014,
- **2012:** Indian Chemical Society award: Professor **A. S. R. Anjaneyulu 60th Birthday Commemoration Award** for the year 2012 by Indian Chemical Society.
- **2011:** 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
- **2009:** Invited by Editor of **Wiley-Blackwell** for the Co-author ship for editing the 3rd Revision of Comprehensive Organic Transformation.

- **2007:** Awarded **BOYSCAST Fellowship** (2007-2008); Iowa State University of Science and Technology, Ames, Iowa, USA for the advance research (Mentor: **Prof. R. C. Larock**)
- **2000:** Awarded Post Doctoral Fellowship/Associate ship by the Dept. of Chemistry, University of Florida, Gainesville, USA, for two year (Jan 2000-Dec. 2001) in the Laboratory of **Prof. Alan R. Katritzky**.

Fellowship/ Distinctions

- Fellow Royal Society of Chemistry (C. Chem, London)
- BOYSCAST Fellow (2007-2008)
- UGC-CSIR JRF (Chemical Sciences-1996)
- ARS NET/Scientist Selection (ASRB, ICAR-1996)
- ARS NET Organic Chemistry (1995)

No. of Ph.D. Guided : Twenty-eight (28) one as a co-supervisor

Total Publications : > 130

Last 5 Year publications : > 57

Average I. F. : > 4.2

Total Citation: : > 4300

h index: : 36

Selected publications as the corresponding author

S.No.	Publication Details	Imp. Factor
1	<i>Org. Lett.</i> 2021 , 22, 4620–4626	6.09
2	<i>Adv. Synth. Catal.</i> 2021 , (https://doi.org/10.1002/adsc.202100674)	5.85
3	<i>Org. Lett.</i> 2021 , 23, 565-570	6.09
4	<i>Adv. Synth. Catal.</i> 2021 , https://doi.org/10.1002/adsc.202100023	5.85
5	<i>Org. Lett.</i> 2020 , 22, 4620–4626	6.09
6	<i>Chem. Commun.</i> , 2020 , 56, 6122-6125	6.22
7	<i>Org. Lett.</i> , 2020 , 22, 130-134	6.09
8	<i>Chem. Eur. j.</i> 2019 (DOI: org/10.1002/chem.201904294)	5.20
9	<i>Chem. Eur. j.</i> 2019 (DOI: org/10.1002/chem.201903495)	5.20
10	<i>Chem. Commun.</i> 2019 , 55, 12168-12171	6.22
11	<i>Chem. Commun.</i> 2019 , 55, 10721-10724	6.22
12	<i>Chem. Commun.</i> 2019 , 55, 9359-9362	6.22
14	<i>Chem. Commun.</i> 2019 , 55, 8278-8281	6.22
15	<i>Org. Lett.</i> , 2019 , 21, 5059-5063	6.09
16	<i>J. Org. Chem.</i> , 2019 , 84, 128067-8079	4.34
17	<i>J. Org. Chem.</i> , 2019 , 84, 2689–26987	4.34
18	<i>Org. Lett.</i> , 2018 , 20, 7182–7185	6.09
19	<i>J. Org. Chem.</i> 2018 , 83, 11686–11702	4.34
20	<i>J. Org. Chem.</i> 2018 , 83, 6650–6663	4.34
21	<i>J. Org. Chem.</i> 2018 , 83, 3339–3347	4.34
22	<i>Acc. Chem. Res.</i> 2017 , 50 (2), pp 240–254	22.0
23	<i>J. Org. Chem.</i> 2017 , 82, 10247–10262	4.34
24	<i>J. Org. Chem.</i> 2017 , 82, 6388–6397	4.34
25	<i>J. Org. Chem.</i> 2016 , 81, 9912–9923	4.34
26	<i>J. Org. Chem.</i> 2016 , 81, 9356–9371	4.34
27	<i>Green Chem.</i> , 2016 , 18, 6367-6372	9.40
28	<i>Chem. Asian J.</i> 2016 , 11, 3001–3007	4.20

29	<i>J. Org. Chem.</i> 2016 , 81, 6563-6572	4.34
30	<i>Org. Lett.</i> 2016 , 18, 2200–2203	6.09
31	<i>Chem. Eur. J.</i> 2015 , 21, 18601–18605	5.20
31	<i>J. Org. Chem.</i> 2015 , 80, 10548–10560	4.34
33	<i>Org. Lett.</i> 2015 , 17, 3658-3661 (Most read article)	6.09
34	<i>Green Chemistry</i> 2015 , 17, 1434-1441	9.40
35	<i>Chem. Commun.</i> 2014 , 50, 8526-8528	6.22
36	<i>J. Org. Chem.</i> 2014 , 78, 6657–6669	4.34
37	<i>J. Org. Chem.</i> 2013 , 78, 6657–6669	4.34
38	<i>J. Org. Chem.</i> 2013 , 78, 5372–5384	4.34
39	<i>J. Org. Chem.</i> 2013 , 78, 4386–4401	4.34
40	<i>Adv. Syn. Cat.</i> 2013 , 355,421-438	5.45
41	<i>J. Org. Chem.</i> 2012 , 77 10382-10392	4.34
42	<i>Org. Lett.</i> 2012 , 14, 5184–5187.	6.09
43	<i>J. Org. Chem.</i> 2012 , 77, 8562–8573	4.34
44	<i>J. Org. Chem.</i> 2012 , 77, 8191–8205	4.34
45	<i>J. Org. Chem.</i> 2012 , 77, 5633-5645	4.34
46	<i>Org. Lett.</i> 2012 , 14, 1106-1109.	6.09
47	<i>Org. Lett.</i> 2011 , 13, 1630-1633	6.09
48	<i>J. Org. Chem.</i> 2011 , 76, 5670-5684	4.34
49	<i>Green Chem.</i> 2011 , 13, 1640-1643	9.40
50	<i>Chem. Commun.</i> 2010 , 46, 4064-4066	6.22
51	<i>J. Org. Chem.</i> 2010 , 75, 7691-7703	4.34
52	<i>Angew. Chem. Int. Ed.</i> 2009 , 48, 1138-1143 (First, ever paper published from Delhi University as the corresponding author)	15.25
	Ten Most Cited Research Papers	Citations
1	<i>Angew. Chem Int. Ed.</i> 2009 , 48, 1138-1143	200
2	<i>Tetrahedron Letters</i> , 2007 , 48, 7199-7202	150
3	<i>Tetrahedron Letters</i> , 2007 , 48, 4207-4210	117
4	<i>Acc. Chem. Res.</i> 2017 , 50, 240-254	114
5	<i>Chem. Commun.</i> 2010 , 46, 4064-4066	102
6	<i>J. Org. Chem.</i> 2010 , 75, 7691-7703	94
7	<i>Org. Lett.</i> 2011 , 17, 3658-3661	82
8	<i>Org. Lett.</i> 2011 , 13, 1630-1633	77
9	<i>J. Org. Chem.</i> 2018 , 76, 5670-5684	77
10	<i>J. Org. Chem.</i> 2013 , 78, 6657-6669	71

Sponsored Research Projects

- Title of the Project:** “Diversity Oriented C-H functionalization of Arene/Heteroarene”
Funding agency: SERB, DST
Amount: 38.19 Lakhs
Duration: Three year (2019-2022)
- Title of the Project:** “Design of Novel Fluorinating Reagent: Application in the Synthesis of Fluoro Organic Molecules”
Funding agency: DRDO
Amount: 39.35 Lakhs

Duration: Three year (2019-2022)

3. **Title of the Project:** "Design of Novel Approaches for the Synthesis of Highly Functionalized N-Heterocycles: An application in Total Synthesis of Isoquinoline Alkaloids"

Funding agency: SERB, DST

Amount: Approved

Duration: Three year (2019-2022)

4. **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)

5. **Title of the Project:** "Metal- and Protection-Free Hydroamination of Nucleobases and N-Heterocycles: Post Modification in DNA Bases"

Funding agency: CSIR

Amount: 27.73 Lakhs

Duration: Three year (2016-2019)

6. **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)

7. **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 (2010-2012)

6. **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)

6. **Title of the Project:** "Design and Synthesis of New class of DNA intercalating agents"

Funding agency: Delhi University (PURSE Grant)

Amount: 28.7 Lakhs

Duration: Three year (2009-2010)

7. **Title of the Project:** "Design Synthesis and biological evaluation of novel integrase"

Funding agency: DST

Amount: ~36.0 Lakhs

Duration: Two year (2009-2012)

Role: Co-Investigator

8. **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: 20.38 Lakhs

Duration: Two year (2009-2010)

- 9. 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 (2009-2011)

- 10. Title of the Project:** "An Efficient Assembly of Heterobenzazepines and tetrahydropyrazino indoles ring system by intramolecular cyclization by benzotriazole methodology"

Funding agency: DST

Amount: 12 Lakhs

Duration: Three year (2003-2006)

- 11. 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)

LIST OF INTERNATIONAL COLLABORATIVE PROJECTS

- 1. 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 (Indo-Mexico Joint project)

Amount: 29.8 Lakhs

Duration: Three year (2012-2014)

- 2. Title of the Project:** "Synergetic C-H functionalization of Arenes/Heteroarenes via Sequential Transition-metal and Photoredox Catalysis"

Funding agency: DST-DAAD Joint project)

Amount: Sanctioned

Duration: Two year (2019-2021)

Scientific Collaboration:

International Scientific Collaboration	i. Prof. Vincent Gandon Université Paris-Saclay Institut de Chimie Moléculaire et des Matériaux d'Orsay (ICMMO); Equipe de Catalyse Moléculaire (Bâtiment 420) 91405 Orsay cedex - France
	i. Prof. Dr. Oliver Reiser Institut für Organische Chemie Universität Regensburg Universitätsstr. 31 93053 Regensburg
National Scientific Collaboration	i. Dr. Shibdas Banerjee , IISER Tirupati, India ii. Prof. P. V. Bhartam , NIPER, Mohali, India

Number of Ph.D. Students guided: 31 (one as a co-supervisor)

S.No	Name of the Student	Title of the work	Year of Submission
1	Mr. Rupesh Kumar	Copper nanoparticle catalysed C-N bond formation: Michael reaction and amination of aryl halides	2005 Awarded
2	Mr. Rakesh Kumar Tiwari	Synthesis of substituted 1,2,3,4-tetrahydro pyrazino[1,2-a]indoles and 1,2,3,4-tetrahydro isoquinolines via intramolecular cyclization using benzotriazole methodology	2005 Awarded
3	Mrs. Preeti Chaudry	Synthesis and Antimicrobial activity of N-alkyl and N-aryl piperazine derivatives using benzotriazole methodology	2006 Awarded
4	Ms. Alka Agarwal*	An evaluation of the effect of the extracts of <i>Asparagus racemosus</i> on hepato carcinogenesis initiated by Diethylnitrosamine in an animal model	2008 Awarded
5.	Mr. V. Kasi Sankar	Benzotriazole assisted synthesis of 1,2- and 1,5- annulated polycyclic quinoxalines.	2009 Awarded
6.	Mr. Jaspal Singh	Design of benzotriazole based ligands for Cu/Pd-catalyzed C(aryl)-N, C-(aryl)C and C-S bond formation	2010 Awarded
7.	Mariam Imam	Structural and Immunological Characterization of Merozoite Surface Protein 3 of <i>Plasmodium falciparum</i>	2010 Awarded
8.	Mr. Nagendra Kumar Kaushik	Synthesis and antimicrobial evaluation of 1,2,3,4-tetrahydropyrazino[1,2-a]indoles	2011 Awarded
9.	Ms. Ritu Chaudhary	2-(1-benzotriazolyl)pyridine: A Novel Bidentate Ligand for the Coupling Reactions"	2011 Awarded
10	Ms. Aprajita Negi**	Role of Metalloprophyrins in Modulating Malaria Induced Haemolytic Anaemia in Mouse Model	2011 Awarded
11	Ms. Megha Joshi	Base mediated regio- and stereoselective intermolecular hydroamination of alkynes"	2012 Awarded
12	Ms. Trapti Aggarwal	Regioselective Synthesis of Polyheterocycles by the Electrophilic Iodocyclization of Alkynes and Metal-Catalyzed Diversification	2013 Awarded
13	Ms. Vineeta Rustagi	Ag(I)-Catalyzed Regioselective Tandem Synthesis of Fused Heterocycles from <i>ortho</i> -Alkynylaldehydes	2013 Awarded
14	Ms. Satya Prakash	Iodine-Mediated and Metal-Catalyzed Synthesis of Heterocycles via Electrophilic 6- <i>endo-dig</i> Ring Closure of Alkynes	2013 Awarded

15	Mr. Rajeev Ranjan Jha	Stereoselective Synthesis of Fused Heterocycles by Tandem Reaction of Alkynes	2014 Awarded
16	Mr. Abhinandan Dhanodia	Heterocycles Synthesis via Palladium-catalyzed sequential coupling reaction	2015 Awarded
17	Mr. Shiva Kotla Reddy	Transition-Metal Catalyzed Novel Approaches for the Tandem Synthesis of Naphthyridines/Thienopyridines/Acridones/ γ -carbolines and Isoquinolines from Alkynes	2015 Awarded
18	Mr. Rakesh Kumar Saunthwal	Novel Approaches for the Synthesis of <i>N</i> -Heterocycles via C-H Activation/[4+2] Cycloaddition and Michael Addition	2017 Awarded
19	Ms. Monika Patel	Base Assisted Chemo- and Regioselective C-N, C-S and C-O Bond Formation with Isotopic Labeling Studies	2017 Awarded
20	Mr. Sonu Kumar	Tandem Approaches for the synthesis of Fused <i>N</i> -Heterocycles via 6-endo-dig Ring Closer of Alkynes	2017 Awarded
21	Mr. Deepak Chaudhary	Novel Approaches for the Synthesis of Structurally Diversified N/S/O-Heterocyclic Compounds	2017 Awarded
22	Ms. Shilpi Pal	Transition-metal and lewis acid promoted synthetic approach to multifunctionalization of <i>ortho</i> -arylalkynylaldehydes	2018 Awarded
23	Mr. Pradeep Beniwal	Strategies for N/O-Heterocycles ----alkyne activation	2018 Awarded
24	Ms. Vineeta Garg	Transitional metal free Hydroamination of <i>N</i> -heterocycles by aromatic and aliphatic alkynes.	2018 Submitted
25	Ms. Pooja Yadav	Identification polypyrimidine.....Inhibitors	2018 Awarded
26	Stuti Pandey	Synthesis of Novel Bis-Benzthiazoles/Bis-Benzimidazoles and their Evaluation as Anticancer and Antibacterial	2019 Awarded
27	Pawan Mishra	Metal-free synthesis of <i>N</i> -Heterocycle	2020 Awarded
26	Kapil Mohan Saini	Transition Metal Catalyzed Synthesis of N/O Heterocycles	2020 Submitted
29	Shiv Kumar	Chemoselective Oxidative Esterification and Iodocyclization Hydroxyalkynyl Aldehyde	2021 Submitted
30	Shalini Verma	Synthesis of N & O Heterocycles using Cascade Strategy	2021 Submitted
31	Manoj Kumar	Synthesis of fused heterocycles by Metal Catalyzed C-H Activation	2021 Submitted
32	Sushmita	Electrophilic Fluorination of Small Organic Molecules	2021 Submitted

*as a co-supervisor

** Signed on behalf of Prof. Ramesh Chandra

Supervision of doctoral thesis under progress: 08

S.No	Name of the Student	Title of the work	Year of Registration
1	Ankit	Synthesis of Small Molecules using Ynones	2018
2	Ayushee Singh	Base-Mediated Hydroamidation of Alkynes	2018
3	Priyanka Meena	Base-Mediated Methy-Sylfoxilation of Vinyl Arenes	2018
4	Deepika Thakur		2021
5	Shivam		2021
6	Muskan		2021
7			

Complete List of Publications with Citations

Citation Summary

Citations	>780	150-200	100-150	75-100	50-75	25-50	15-25	05-15
No of Pub.	01	03	05	06	14	21	15	34

Total Citations: > 4200

h-Index: 36

Last 5 Year Pub: >59

Publication Summary

Key Journal	Angew. Chem	Acc. Chem. Res	Org. Lett	Chem. Comm.	J.Org. Chem.	Chem. Eur. J.	OBC	ADSC/ EIOC	TL/ Tetrahedron
Pub. (IF)	01 (12.95)	01 (20.83)	11 (6.09)	07 (6.22)	23 (4.33)	03 (4.80)	12 (3.87)	03/06 5.8/2.9	09/03 (2.27/2.33)

Total Publications	Average I.F.	Pub. In last 10 Years	Pub. 2015-2021
127 > 115 as Corresponding author	~ 4.20	~100	65

S. No	Complete List of Publications	I.F./ Citation
Year 2021		
131	"Tandem 6π -Azatriene Electrocyclization of Fused Amino-Cyclopentenones: Synthesis of Functionalized Pyrrolo- and Indolo-quinoxalines" Kapil Mohan Saini, Rakesh K. Saunthwal, Ankit Kumar, and Akhilesh K. Verma * <i>Org. Lett.</i> 2020 , 22, xx–xx (https://doi.org/10.1021/acs.orglett.1c02782)	6.09 (00)
130	"Achievements in Fluorination Using Variable Reagents through Deoxyfluorination Reaction" Trapti Aggarwal, Sushmita and Akhilesh K. Verma* <i>Org. Chem. Front.</i> , 2021 , (doi.org/10.1039/D1QO00952D)	5.28 (00)
129	"Radical Promoted Synthesis of Furoquinolines via Anomalous Dakin-Type Reaction" Sushmita, Trapti Aggarwal, Kapil Mohan Saini and Akhilesh K. Verma* <i>Adv. Synth. Catal.</i> 2021 (https://doi.org/10.1002/adsc.202100674)	5.85 (00)

128	<i>"Base-Catalyzed Selective Deuteration of Alkynes"</i> Shiv Kumar, Monika Patel, and Akhilesh K. Verma* <i>Asian, J. Org. Chem.</i> 2021 (doi.org/10.1002/ajoc.202100405)	3.13 (00)
127	<i>"Diacetylene-Based Colorimetric Radiation Sensors for the Detection and Measurement of γ Radiation during Blood Irradiation"</i> Apoorva Mittal, Shalini Verma, Gopishankar Natanasabapathi, Pratik Kumar*, and Akhilesh K. Verma* <i>ACS Omega</i> 2021 , https://doi.org/10.1021/acsomega.0c06184	3.51 (00)
126	<i>"Base-Promoted Synthesis of Polysubstituted 4-Aminoquinolines from Ynones and 2-Aminobenzonitriles under Transition-Metal-Free Conditions"</i> Ankit Kumar, Pawan K. Mishra, Kapil Mohan Saini, and Akhilesh K. Verma* <i>Adv. Synth. Catal.</i> 2021 , https://doi.org/10.1002/adsc.202100023	5.85 (00)
125	<i>"Quantification of Narrow-band UVB Radiation doses in Phototherapy using Diacetylene based Film Dosimeters"</i> Apoorva Mittal, Manoj Kumar, N. Gopishankar, Pratik Kumar and Akhilesh K. Verma* , <i>Scientific Reports</i> 2021 , <i>11</i> , 684	4.0 (00)
124	<i>"Base-Mediated Anti-Markovnikov Hydroamidation of Vinyl Arenes with Arylamides"</i> Ayushee, Monika Patel, Priyanka Meena, Kousar Jahan, Prasad V. Bharatam and Akhilesh K. Verma* <i>Org. Lett.</i> 2021 , <i>23</i> , 565-570	6.09 (00)
123	<i>"Development and Dosimetric Characterization of Novel Amide Substituted Diacetylene based Radiochromic Films for Medical Radiation Dosimetry"</i> Apoorva Mittal, Gopishankar Natanasabapathi, Akhilesh K. Verma , Pratik Kumar* <i>Radiat. Phy. Chem.</i> 2021 , <i>182</i> , 109391	2.79 (00)
Year 2020		
122	<i>"Ru(II)-Catalyzed Oxidative Olefination of Benzamides: Switchable Aza-Michael and Aza-Wacker Reaction for Synthesis of Isoindolinones"</i> Manoj Kumar, Shalini Verma and Akhilesh K. Verma* <i>Org. Lett.</i> 2020 , <i>22</i> , 4620–4626	6.09 (05)
121	<i>"Well-Defined Palladium N-Heterocyclic Carbene Complexes: Direct C–H Bond Arylation of Heteroarenes"</i> Anuj Kumar, Manoj Kumar, and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2020 , <i>85</i> , 13983-13996	4.33 (01)
120	<i>"2-Alkynylarylnitrile: An Emerging Precursor for the Generation of Carbo- and Heterocycles"</i> Pawan K. Mishra, Satyaki Chatterjee, and Akhilesh K. Verma* <i>ACS Omega</i> 2020 , <i>5</i> , 32133–32139 (Invited Article)	3.51 (00)
119	<i>"Exploring the behavior of the NFSI reagent as a nitrogen source"</i> Sushmita, Trapti Aggarwal, Sonu Kumar and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2020 , <i>18</i> , 7056-7073	3.87 (00)
118	<i>"Synthesis of Cyclopentaquinolinone and Cyclopentapyridinone from ortho-alkynyl-N-arylaldehyde via Superbase-promoted C-N, C-O, and C-C Bonds Formation"</i> Kapil Mohan Saini, Rakesh K. Saunthwal, Sushmita and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2020 , <i>18</i> , 5594-5601	3.87 (00)
117	<i>"Development and Characterization of Urethane Substituted Diacetylene based Radiochromic films for Medical Radiation Dosimetry"</i> Apoorva Mittal, N.	2.79

	Gopishankar, Julia Koleda, Akhilesh K. Verma, Pratik Kumara* <i>Radiat. Phys. Chem.</i> 2020 , 177, 109119	(00)
116	"BF ₃ -Etherate-Catalyzed Tandem Reaction of 2-Formylarylketones with Electron-rich Arenes/Heteroarenes: An Assembly of Isobenzofurans" Pawan K. Mishra, Ankit Kumar and Akhilesh K. Verma* <i>Chem. Commun.</i> , 2020 , 56 , 6122-6125	6.22 (01)
115	"Olefin-Oriented Selective Synthesis of Linear and Branched N-Alkylated Heterocycles via Hydroamination" Sushmita, Trapti Aggarwal, Kapil Mohan Saini and Akhilesh K. Verma* <i>Eu. J. Org. Chem.</i> 2020 , 3312–3316	2.89 (00)
114	"Aza-Henry Reaction: Synthesis of Nitronaphthylamines from 2-(Alkynyl) benzonitriles" Shalini Verma, Manoj Kumar and Akhilesh K. Verma* <i>Org. Lett.</i> 2020 , 22, 130-134	6.09 (06)
113	"Transition-Metal-Free Reverse Reactivity of (2-alkynyl)-Arylaldimines: Assembly of Functionalized Amino-Indinones" Kapil M. Saini, Rakesh K. Saunthwal, Sushmita, and Akhilesh K. Verma* <i>Chem. Eur. J.</i> 2020 , 26, 1017-1021	4.85 (01)
Year 2019		
112	"Triple bond Directed Csp ² -N Bond Formation through N-Fluorobenzenesulfonimide as Aminating Source: One-Step Transformation of Aldehyde into Amine" Sushmita, Trapti Aggarwal, Norio Shibata, and Akhilesh K. Verma* <i>Chem. Eur. J.</i> 2019 , 25, 16063-16067	4.85 (03)
111	"Rh(III)-Catalyzed Alkynylation: Synthesis of Functionalized Quinolines from Aminohydrazones" Pradeep Kumar, Vineeta Garg, Manoj Kumar, and Akhilesh K. Verma* <i>Chem. Commun.</i> , 2019 , 55 , 12168-12171	6.22 (07)
110	"Recent Advances in the Synthesis of Carbazoles from Indoles" Trapti Aggarwal, Sushmita, and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2019 , 17 , 8330-8342	3.87 (11)
109	"Dual Function of Carbon Tetrachloride: Synthesis of Chlorinated Heterocycles" Shiv Kumar, Rakesh K. Saunthwal, Kapil M. Saini and Akhilesh K. Verma* <i>Chem. Commun.</i> , 2019 , 55 , 10721-10724	6.22 (02)
108	"Mechanistic Insights of Cu(II)-Mediated ortho-C-H Amination of Arenes by Capturing Fleeting Intermediates and Theoretical Calculations" Manoj Kumar, Shalini Verma, Anubhav Kumar, Pawan K. Mishra, Raghunath Ozhapakkam Ramabhadran, Shibdas Banerjee and Akhilesh K. Verma* <i>Chem. Commun.</i> , 2019 , 55 , 9359-9362	6.22 (02)
107	"Human Disorders Associated with Inflammation and the Evolving Role of Natural Products to Overcome" Navneet Kishore, Pradeep Kumara, Karuna Shanker, and Akhilesh K. Verma* <i>Eur. J. Med. Chem.</i> 2019 , 179, 272-309	6.51 (12)
106	"Harnessing the Reactivity of ortho-Formyl-arylketones: Base-Promoted Regiospecific Synthesis of Functionalized Isoquinolines" Pawan K. Mishra, Shalini	6.22 (07)

	Verma, Manoj Kumar, Ankit Kumar, and Akhilesh K. Verma* <i>Chem. Commun.</i> , 2019 , 55, 8278-8281	
105	"Metal-Free Carbonyl-Assisted Regioselective Hydration of Alkynes: An Access to Dicarboxyls" Shalini Verma, Manoj Kumar, Pawan K. Mishra and Akhilesh K. Verma* <i>Org. Lett.</i> 2019 , 21, 35059-5063	6.09 (06)
104	"Azidation vs [3+2]-cycloaddition: Chemoselective reaction of sodium azide towards <i>o</i> -alkynylaldehydes for the synthesis of <i>N</i> -heterocycles" Pradeep Kumar, Vineeta Garg, and Akhilesh K. Verma* <i>Tetrahedron Letters</i> 2019 , 60, 1854–1859	2.37 (02)
103	"Cu(II)-Mediated <i>ortho</i> -C-H Amination of Arenes with Free Amines" Manoj Kumar Shalini Verma, Pawan K. Mishra, and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2019 , 84, 8067-8079	4.33 (08)
101	"On Water: Metal-free Synthesis of Highly Functionalized Benzothiazolylidene from <i>ortho</i> -Haloanilines" Kapil M. Saini, Rakesh K. Saunthwal, Shiv Kumar, and Akhilesh K. Verma* <i>J. Org. Chem.</i> , 2019 , 84, 2689–26987	4.33 (06)
100	"On Water: Iodine-Mediated Direct Construction of 1, 3- Benzothiazines from <i>ortho</i> -Alkynylanilines by Regioselective 6- Exo-dig Cyclization" Kapil M. Saini, Rakesh K. Saunthwal, Shiv Kumar and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2019 , 17, 2657-2662 (Hot Article collection)	3.87 (04)
Year 2018		
99	"Base-Mediated Direct Transformation of <i>N</i> -Propargylamines into 2,3,5-Trisubstituted 1 <i>H</i> -Pyrroles" Pawan K. Mishra, Shalini Verma, Manoj Kumar, and Akhilesh K. Verma* <i>Org. Lett.</i> 2018 , 20, 7182–7185	6.09 (13)
98	"Substrate-Controlled Regio- and Stereoselective Synthesis of (<i>Z</i>)- and (<i>E</i>)- <i>N</i> -Styrylated Carbazoles, Aza-carbazoles, and γ -Carbolines via Hydroamination of Alkynes". Vineeta Garg, Pradeep Kumar, and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2018 , 83, 11686–11702.	4.33 (06)
97	"Base- Mediated Deuteration of Small Organic Molecules: A Mechanistic Insight" Monika Patel, Rakesh K. Saunthwal and Akhilesh Kumar Verma* <i>ACS Omega.</i> 2018 , 3, 10612-10623. (Invited article)	3.51 (10)
96	"Transition-Metal-Free Access to Pyridocarbazoles from 2-Alkynylindole-3-carbaldehydes via Azomethine Ylide" Verma, Shalini; Mishra, Pawan; Kumar, Manoj; Sur, Souvik; Verma, Akhilesh K. Verma* <i>J. Org. Chem.</i> , 2018 , 83, 6650–6663	4.33 (07)
95	"Copper-Catalyzed Stereo- and Chemoselective Synthesis of Enaminones Via Michael Type Addition" Patel, Sushmita and Akhilesh K. Verma* <i>J. Chem. Sci.</i> 2018 , 130 (70), 91 DOI: 10.1007/s12039-018-1465-9 (Invited article)	1.23 (03)
94	"Base-Promoted Stereoselective Hydroalkoxylation of Alkynes" Monika Patel, Sushmita, and Akhilesh K. Verma* <i>Ind. J. Het. Chem.</i> 2018 , 28, 107 (Invited article)	~1.00
93	"Regio- and Stereoselective Synthesis of Isoindolin-1-ones through BuLi-Mediated Iodoaminocyclization of 2-(1-Alkynyl)benzamides" Dharendra Brahmchari Akhilesh	4.33 (23)

	K. Verma , and Saurabh Mehta <i>J. Org. Chem.</i> , 2018 , 83, 3339–3347	
	Year 2017	
92	"Pd-Catalyzed One-Pot Sequential Cross-Coupling Reactions of Tetrabromothiophene" Kapil M. Saini, Rakesh K. Saunthwal and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2017 , 15, 10289-10298	3.87 (05)
91	"Chemoselective Oxidative Esterification and Iodocyclization of Hydroxyalkynyl Aldehydes" Shiv Kumar, Monika Patel, Rakesh K. Saunthwal and Akhilesh K. Verma* , <i>Asian J. Org. Chem.</i> 2017 , 6, 1893–1902	3.13 (04)
90	"Chemo-, Regio- and Stereoselective N-alkenylation of Pyrazoles/Benzopyrazoles using Activated and Unactivated Alkynes" Vineeta Garg, Pradeep Kumar, and Akhilesh K. Verma* , <i>J. Org. Chem.</i> , 2017 , 82, 10247–10262	4.33 (09)
89	"Ag(I)-Catalyzed Cycloisomerization Reactions: Synthesis of Substituted Phenanthrenes and Naphthothiophenes" Rakesh K. Saunthwal, Abhinandan K. Danodia, Kapil M. Saini and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2017 , 15, 6934-6942	3.87 (09)
88	"Trifluoroacetic acid Mediated One-Pot Synthesis of Furo-Fused Quinoxalines/Pyrazines" Kapil M. Saini, Sonu Kumar, Monika Patel, Rakesh K. Saunthwal and Akhilesh K. Verma* <i>Eur. J. Org. Chem.</i> 2017 , 3707–3715	2.83 (03)
87	"Chemoselective Azidation of o-Alkynylaldehydes over [3+2] Cycloaddition and Subsequent Staudinger Reaction: An Easy Access to Benzonaphthyridines/Naphthyridines". Pradeep Kumar, Trapti Aggarwal and Akhilesh K. Verma* <i>J. Org. Chem.</i> , 2017 , 82, 6388–6397	4.33 (10)
86	"Regioselective 6-endo-dig Iodocyclization: An accessible approach for Iodo-benzo[a]phenazines" Sonu Kumar, Mohammad Mujahid and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2017 , 15, 4686-4696	3.87 (15)
85	"Regioselective Preferential C-H Activation of Sterically Hindered 1,3-Dienes over [4+2] cycloaddition" Rakesh K. Saunthwal, Kapil M. Saini, Monika Patel and Akhilesh K. Verma* <i>Tetrahedron</i> , 2017 , 73, 2415–2431	2.64 (18)
84	"Base-Mediated Hydroamination of Alkynes" Monika Patel, Rakesh K. Saunthwal and Akhilesh K. Verma* <i>Acc. Chem. Res.</i> 2017 , 50, 240–254 Note: (First ever paper published from Delhi University as corresponding author)	20.8 (101)
	Year 2016	
83	"Palladium-Catalyzed Intramolecular Fujiwara-Hydroarylation: Synthesis of Benzo[a]phenazines Derivatives" Sonu Kumar, Rakesh K. Saunthwal, M. Mujahid, Trapti Aggarwal and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2016 , 81,9912–9923	4.33 (22)
82	"Regioselective 5-endo-dig Electrophilic Iodocyclization of Ene-diyne: A Convenient Route to Iodo-substituted Indenes and Cyclopenta Fused Arenes" R. K. Saunthwal, Abhinandan K. Danodia, Monika Patel, S. Kumar and Akhilesh K. Verma* <i>Chem. Asian J.</i> 2016 , 11, 3001–3007	4.05 (13)

81	"Regio- and Stereoselective Tandem Synthesis of Oxazolo fused Pyridoindoles and Benzofurooxazolo Pyridines from ortho-Alkynylaldehydes" Shilpi Pal, Deepak Choudhary, Mohit Jainth, Sonu Kumar, Rakesh K. Tiwari, and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2016 , <i>81</i> , 9356–9371	4.33 (10)
80	"Metal-Free Regioselective Tandem Synthesis of Diversely Substituted Benzimidazo-Fused Polyheterocycles in Aqueous Medium" Pawan K. Mishra and Akhilesh K. Verma* <i>Green Chem.</i> , 2016 , <i>18</i> , 6367-6372	9.4 (12)
79	"Palladium Meets Copper: One-Pot Tandem Synthesis of Pyrido Fused Heterocycles via Sonogashira Conjoined Electrophilic Cyclization" Sonu Kumar, Rakesh K. Saunthwal, Trapti Aggarwal, Siva K. Reddy and Akhilesh K. Verma* <i>Org. Biomol. Chem.</i> , 2016 , <i>14</i> , 9063-9071 Highlighted in "When Palladium Meets Copper, SYNFACTS 01, 2016, 12(12), 1255"	3.87 (19)
78	"Regioselective Synthesis of C-3 Functionalized Quinolines via Hetero Diels-Alder Cycloaddition of Azadienes with Terminal Alkynes" Rakesh K. Saunthwal, Monika Patel and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2016 , <i>81</i> , 6563-6572	4.33 (41)
77	"Iodine-Mediated Synthesis of Heterocycles via Electrophilic Cyclization of Alkynes" Akhilesh K. Verma,* Trapti Aggarwal and Sonu Kumar <i>Org. Biomol. Chem.</i> , 2016 , <i>14</i> , 7639-7653	3.87 (83)
76	"Pd-Catalyzed One-Pot Sequential Unsymmetrical Cross-Coupling Reactions of Aryl / Heteroaryl 1,2-Dihalides" Abhinandan K. Danodia, Rakesh K. Saunthwal, Monika Patel, Rakesh K. Tiwari and Akhilesh K. Verma* <i>Organic & Biomolecular Chemistry</i> , 2016 , <i>14</i> , 6487-6496	3.87 (19)
75	A General and Efficient Pd-Catalyzed Rapid 2-Fluoroethoxylation of Bromo-Chalcones T. M. Rangarajan* Kavita Devi, Akhilesh K. Verma; Rishi Pal Singh and Raj Pal Singh, <i>J. Fluorine Chem.</i> 2016 , <i>186</i> , 101-110	2.33 (07)
74	"Metal and Protection-Free [4+2] Cycloadditions of Alkynes with azadienes: An Efficient Assembly of Functionalized Quinolines" Akhilesh K. Verma* Rakesh K. Saunthwal and Monika Patel <i>Org. Lett.</i> 2016 , <i>18</i> , 2200–2203 Highlighted in Organic Process Research & Development 2016 , <i>20</i> , 1691	6.09 (44)
73	"Metal-free Intermolecular Hydrophenoxylation of Aryl Alkynes" Monika Patel, Rakesh K. Saunthwal, Devendra K. Dhaked, Prasad V. Bharatam and Akhilesh K. Verma* <i>Asian J. Org. Chem.</i> 2016 , <i>5</i> , 213-221	3.13 (09)
Year 2015		
72	"Pd (II)-Catalyzed C-H activation of styrylindoles: Short, efficient and regioselective synthesis of functionalized carbazoles" Rakesh K. Saunthwal, Monika Patel, Sonu Kumar, Abhinandan K. Danodia and Akhilesh K. Verma* <i>Chem. Eur. J.</i> 2015 , <i>21</i> , 18601–18605	4.85 (43)
71	"An Expedient Tandem Approach to Benzothieno, and Benzofuopyridines from o-Alkynyl Aldehydes via Silver-Catalyzed 6-endo-dig Ring Closure" Sonu Kumar, Carlos Cruz, Shilpi Pal, Rakesh K. Saunthwal, Rakesh K. Tiwari, Eusebio Juaristi, and	4.33 (20)

	Akhilesh K. Verma* <i>J. Org. Chem.</i> 2015 , 80, 10548–10560	
70	"Design, synthesis and biological evolution of 1,2-Dihydroisoquinolines as HIV-1 Integrase Strand Transfer Inhibitors (INSTIs): Synthesis, Biological Evaluation and Molecular Modeling" 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 <i>ACS Med. Chem. Lett.</i> 2015 , 6, 1065–1070	3.97 (16)
69	"Palladium-Catalyzed Triple Successive C-H Functionalization: Direct Synthesis of Functionalized Carbazoles from Indoles" Akhilesh K. Verma ,* Abhinandan K. Danodia, Rakesh K. Saunthwal, Monika Patel, and Deepak Choudhary <i>Org. Lett.</i> 2015 , 17, 3658-3661 (Most Read Article)	6.09 (78)
68	"(1H-benzo[d][1,2,3]triazol-1-yl)methanol: An Efficient Bidentate Ligand for Copper Catalyzed S-Arylation of Thiols" Rajeev Ranjan Jha, Deepak Choudhary and Akhilesh K. Verma* <i>Ind. J. Het. Chem.</i> 2015 , 24, 451-458 (Invited R. S. Verma)	0.5 (01)
67	"Nu-Addition Vs S _n Ar Study: Chemo-, Regio- and Stereoselective Preferential Hydrothiolation of Haloarylalkynes over S-Arylation of Aryl Halides" Monika Patel, Rakesh K. Saunthwal, <i>Devendra K. Dhaked</i> , Prasad V. Bharatam and Akhilesh K. Verma* <i>Asian J. Org. Chem.</i> 2015 , 4, 894 –898	3.13 (06)
66	"Rhodium(III)-Catalyzed Double C-H Activation: A Straightforward Approach to Fused Imidazo[1,2-A]Pyridines from Internal Alkynes" Siva K. Reddy Kotla, Deepak Choudhary, Rakesh K. Tiwarib and Akhilesh K. Verma* <i>Tetrahedron Letters</i> 2015 , 56, 4706–4710	2.27 (14)
65	"Mild and Efficient Palladium/Brettphos-Catalyzed Methoxylation and Deuteriomethoxylation of Activated Aryl Bromides" T.M. Rangarajan, Raju Brahma, Ayushee, Ashok K. Prasad, Akhilesh K. Verma , Rishi Pal Singh <i>Tetrahedron Letters</i> , 2015 , 56, 2234-2237	2.27 (18)
64	"On Water: Catalyst-Freechemoselective Synthesis of Highly Functionalized Tetrahydroquinazolines from 2-Aminophenylacrylate" Rakesh K. Saunthwal, Monika Patel, Rakesh K. Tiwari, Keykavous Parang and Akhilesh K. Verma* <i>Green Chem.</i> 2015 , 17, 1434-1441	9.4 (27)
63	"Cu(II)-Catalyzed Tandem Synthesis of 2-Imino[1,3]Benzothiazines from 2-Aminoaryl Acrylates via Thioamidation and Concomitant Chemoselective Thio-Michael Addition" Rakesh K. Saunthwal, Monika Patel, Sushil Kumar and Akhilesh K. Verma* <i>Tetrahedron Letters</i> , 2015 , 56, 677–681	2.27 (22)
62	"Pd-Catalyzed Heck-Conjoined Amidation and Concomitant Chemoselective Michael-Addition: An Efficient Tandem Approach to Highly Functionalized Tetrahydroquinazolines from o-Haloanilines" Rakesh K. Saunthwal, Monika Patel, Abhinandan K. Danodia, and Akhilesh K. Verma* <i>Org. Biomol. Chem</i> , 2015 , 13, 1521-1530	3.87 (16)
	Year 2014	

61	"Synthesis of Fused Heterocycles via Preferential Hydroamination over N-Arylation and Concomitant Intramolecular C-C Bond Formation" Rajeev R. Jha, Abhinandan Kumar Danodia and Akhilesh K. Verma* <i>Tetrahedron Letters</i> 2014 , 55, 4724-4730	2.27 (07)
60	"An Expedient Approach to Pyrrolo[3,2-c]quinolines via Regioselective Formation of Pyrrole Nucleus over Indoles" Manjusha V. Karkhelikar, Rajeev R. Jha, B. Sridhar, Pravin R. Likhar* and Akhilesh K. Verma* <i>Chem. Commun.</i> 2014 , 50, 8526-8528	6.22 (08)
59	"Stereoselective Tandem Synthesis of Oxazolo-Fused Pyrroloquinolines from O-Alkynylaldehydes via Ag(I)-Catalyzed Regioselective 5-Exo-Dig Ring Closure" Rajeev R. Jha, Trapti Aggarwal and Akhilesh K. Verma* <i>Tetrahedron Letters</i> , 2014 , 55, 2603-2608	2.27 (12)
58	"Base-Mediated Chemo- and Stereoselective Addition of 5-Aminoindole/Tryptamine and Histamines onto Alkynes" Akhilesh K. Verma,* Monika Patel, Megha Joshi, Pravin R. Likhar, Rakesh K. Tiwari, Keykavous Parang <i>J. Org. Chem.</i> 2014 , 79, 172-186	4.33 (26)
57	"Au (III)-Catalyzed regio- and Stereoselective Tandem Synthesis of Oxazolo Fused Naphthyridines and Isoquinolines from O-Alkynylaldehydes" Rajeev R. Jha, Abhinandan K. Danodia, Sushil Kumar and Akhilesh K. Verma* <i>Tetrahedron Letters</i> , 2014 , 55, 610-615	2.27 (11)
56	"Base-Catalysed Stereoselective Intermolecular Addition of Imidazoles onto Alkynes: An Easy Access to Imidazolyl Enamines" Monika Patel, Rakesh K. Saunthwal and Akhilesh K. Verma* <i>Tetrahedron Letters</i> 2014 , 55, 1310-1315	2.27 (32)
55	"Stereoselective Tandem Synthesis of Thiazolo Fused Naphthyridines and Thienopyridines from O-Alkynylaldehydes via Au(III)-Catalyzed Regioselective 6-Endo-dig Ring Closure" Rajeev R. Jha, Rakesh K. Saunthwal and Akhilesh K. Verma* <i>Org. Biomo. Chem.</i> , 2014 , 12, 552-556	3.87 (23)
	Year 2013	
54	"Selective Synthesis of 4,5-Dihydroimidazo- and Imidazo[1,5-a]Quinoxalines via Modified Pictet-Spengler Reaction" Akhilesh K. Verma,* Rajeev R. Jha, V. Kasi Sankar, Raj P. Singh <i>Tetrahedron Letters</i> 2013 , 54, 5984-5990	2.27 (23)
53	"Biomedical Importance of Indoles" Kaushik, N. K., Kaushik, N., Attri, P., Kumar, N., Kim, C.H., Verma, A. K. , Choi, E. H. <i>Molecules</i> 2013 , 18, 6620-6662	3.30 (780)
52	"Antibacterial and cytotoxic activities of diterpenoids isolated from Indian <i>Plectranthuscoesta</i> " Waldia, S., Kaushik, N., Verma, A. K. , Joshi, B. C., Pathak, U., Joshi, M. C. <i>Records of Natural Products</i> 2013 , 7, 355-358	1.26 (03)
51	"On Water: Silver-Catalyzed Domino Approach for the Synthesis of Benzoxazine/Oxazine Fused Isoquinolines and Naphthyridines from ortho-Alkynylaldehydes" Akhilesh K. Verma,* Deepak Choudhary, Rakesh K. Saunthwal,	4.33 (72)

	Vineeta Rustagi, Monika Patel and Rakesh K. Tiwari <i>J. Org. Chem.</i> 2013 , 78, 6657–6669	
50	"Tandem Synthesis of Pyrroloacridones via [3 + 2] Alkyne Annulation/Ring Opening with Concomitant Intramolecular Aldol Condensation" Akhilesh K. Verma,* Siva K. Reddy Kotla, Trapti Aggarwal, Sonu Kumar and R. K. Tiwari <i>J. Org. Chem.</i> 2013 , 78, 5372–5384	4.33 (18)
49	"Silver-Catalyzed Tandem Synthesis of Naphthyridines and Thienopyridines via Three Component Reaction" Akhilesh K. Verma,* Siva K. Reddy Kotla, Deepak Choudhary, Monika Patel and Rakesh K. Tiwari <i>J. Org. Chem.</i> 2013 , 78, 4386–4401	4.33 (56)
48	"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" Akhilesh K. Verma,* Rajeev R. Jha, Ritu Chaudhary, Rakesh K. Tiwari and Abhinandan Danodia <i>Adv. Syn. Cat.</i> 2013 , 355, 421–436	5.85 (54)
47	"Benzotriazol-1-yl-ethanol: An Excellent Bidentate Ligand for the Copper/Palladium Catalyzed C–N and C–C Coupling Reaction" Rajeev R. Jha, Jaspal Singh, Rakesh K. Tiwari, and Akhilesh K. Verma* <i>ARKIVOC</i> 2013 , (ii) 228–248 (Manuscript No. RS-7559IP)	1.25 (10)
	Year 2012	
46	"Palladium-Catalyzed Sonogashira-Coupling Conjoined C–H Activation: A Regioselective Tandem Strategy to Access Indolo-, and Pyrrolo[1,2-a]quinolines" Satya P. Shukla, Rakesh Tiwari, Akhilesh K Verma* <i>J. Org. Chem.</i> 2012 , 77, 10382–10392	4.33 (32)
45	"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" N.K Kaushik, A. Mishra, A. Ali, J.S. Adhikari, A.K. Verma, R Gupta <i>J. Biolo. Inorg. Chem.</i> , 2012 , 17, 1217–1230	3.3 (26)
44	"Palladium-Catalyzed Regioselective [3 + 2] Annulation of Internal Alkynes and Iodo-pyranoquinolines with Concomitant Ring Opening" Trapti Aggarwal, Rajeev R. Jha, Rakesh K. Tiwari, Sonu Kumar, Siva K. Reddy Kotla, Sushil Kumar, and Akhilesh K. Verma* <i>Org. Lett.</i> 2012 , 14, 5184–5187.	6.09 (37)
43	"Site-Selective Electrophilic Cyclization and Subsequent Ring Opening: A Synthetic Route to Pyrrolo[1,2-a]quinolines and Indolizines" Trapti Aggarwal, Sonu Kumar, Devendra K. Dhaked, Rakesh K. Tiwari, Prasad V. Bharatam and Akhilesh K. Verma* <i>J. Org. Chem.</i> 2012 , 77, 8562–8573	4.33 (40)
42	"Silver-Catalyzed Regioselective Synthesis of Acridines, Quinolines and Naphthalenes from 3-(2-alkynyl)aryl- β -ketoesters" Satya Prakash Shukla, Rakesh Tiwari and Akhilesh Kumar Verma* <i>Tetrahedron</i> 2012 , 68, 9035–9044	2.33 (35)
41	"Copper-Catalyzed Tandem Synthesis of Indolo-, Pyrrolo[2,1-a]isoquinolines, Naphthyridines and Bisindolo/ Pyrrolo[2,1-a]isoquinolines via Hydroamination of	4.33

	<i>ortho-Haloarylalkynes Followed by C-2 Arylation</i> ” Akhilesh K. Verma,* Rajeev R. Jha, Ritu Chaudhary, Rakesh K. Tiwari Kotla Siva K. Reddy and Abhinandan Danodia <i>J. Org. Chem.</i> 2012 , 77, 8191–8205	(55)
40	“Benzotriazole and its derivatives as ligands in coupling reaction” Akhilesh K. Verma* <i>Adv. Het. Chem.</i> 2012 , 107, 103-132	4.3 (10)
39	“Base-Mediated Selective Synthesis of Diversely Substituted N-Heterocyclic Enamines and Enaminones by the Hydroamination of Alkynes” Megha Joshi, Monika Patel, Rakesh Tiwari, Akhilesh K. Verma* <i>J. Org. Chem.</i> 2012 , 77, 5633-5645	4.33 (63)
38	“Ag(I)-Catalyzed Cascade Strategy: A Regioselective Access to Diversely Substituted Fused Benzimidazo[2,1-a]isoquinolines, Naphthyridines, Thienopyridines and Quinoxalines in Water” Vineeta Rustagi, Rakesh Tiwari and Akhilesh K. Verma* <i>Eur. J. Org. Chem.</i> 2012 , 4590-4602	2.89 (44)
37	“Regioselective Preferential Nucleophilic Addition of N-Heterocycles onto Haloarylalkynes over N-Arylation of ArylHalides” Megha Joshi, Rakesh K. Tiwari and Akhilesh K. Verma* <i>Org. Lett.</i> 2012 , 14, 1106-1109.	6.09 (40)
	Year 2011	
36	“Di(1H-benzo[d][1,2,3]triazol-1-yl)methane: A Efficient Ligand for Copper- and Amine-free Palladium-Catalyzed Sonogashira Coupling Reaction” Akhilesh K. Verma* and Jaspal Singh <i>J. Chem. Sci.</i> , 2011 , 123, 937-942	1.36 (11)
35	“Comparative Immunogenicities of Full-Length Plasmodium falciparum Merozoite Surface Protein 3 and a 24-Kilodalton N-Terminal Fragment” Maryam Imam, Yengkhom Sangeeta Devi, Akhilesh K. Verma , and Virander Singh Chauhan* <i>Clin. Vaccine Immunol</i> , 2011 , 18, 1221–1228	3.43 (10)
34	“Pyrano[4,3-b]quinolines Library Generation via Iodocyclization and Palladium-Catalyzed Coupling Reactions” Trapti Aggarwal, Maryam Imam, Naveen K. Kaushik, Virander S. Chauhan and Akhilesh K. Verma* <i>ACS Comb. Sci.</i> 2011 , 13, 530-536	3.38 (34)
33	“Synthesis of 5-Iodo-Indolo- and Pyrrolo[1,2-a]quinolines via Iodine-Induced Electrophilic and Regioselective 6-endo-dig Ring Closure” Akhilesh Kumar Verma,* Satya Prakash Shukla and Jaspal Singh, SYNFACTS 2011, 9, 0951-0951 (Highlight of <i>J. Org. Chem.</i> 2011 , 76, 5670-5684)	
32	“Highly efficient Ag(I)-catalyzed regioselective tandem synthesis of diversely substituted Quinoxalines and Benzimidazoles in water” Vineeta Rustagi, Trapti Aggarwal and Akhilesh K. Verma* <i>Green Chem.</i> 2011 , 13, 1640-1643.	9.4 (67)
31	“Benzotriazole: An Efficient, Inexpensive, and Phosphine-Free Ligand for the Palladium-Catalyzed Suzuki-Miyura Reaction” Rajeev R. Jha, Ritu Chaudhary, Ramesh Chandra and Akhilesh K. Verma* <i>J. Ind. Chem. Soc.</i> , 2011 , 88, 1187 (Invited Paper)	0.6 (05)
30	“Fabrication and growth mechanism of ZnO nanostructures and their cytotoxic effect on human brain tumor U87, cervical cancer HeLa, and normal HEK cells” R Wahab, NK Kaushik, AK Verma, A Mishra, IH Hwang, YB Yang, HS Shin, YS Kim <i>J. Biol. Inorg. Chem.</i> 2011 , 16, 431-442	3.3 (97)

29	<p><i>"Tandem and Selective Synthesis of 1,2-Annulated Polycyclic Indolo- and Pyrrolo-Quinoxalines and Quinoxalinones by Modified Pictet-Spengler Reaction"</i> Akhilesh K. Verma,* Rajeev R. Jha, V. Kasi Sankar, Trapti Aggarwal, Rajender P. Singh and R.amesh Chandra <i>Eur. J. Org. Chem.</i> 2011, 76, 6998-7010</p>	<p>3.02 (49)</p>
28	<p><i>"Synthesis of 5-Iodo-Indolo- and Pyrrolo[1,2-a]quinolines via Iodine-Induced Electrophilic and Regioselective 6-endo-dig Ring Closure"</i> Akhilesh K. Verma,* Satya Prakash Shukla and Jaspal Singh <i>J. Org. Chem.</i> 2011, 76, 5670-5684</p>	<p>4.33 (73)</p>
27	<p><i>Base-Mediated Regio- and Stereoselective Intermolecular Addition of Alkynes to N-Heterocycles</i> Akhilesh K. Verma* Megha Joshi and Ved Prakash Singh <i>Org. Lett.</i> 2011, 13, 1630-1633</p>	<p>6.09 (76)</p>
26	<p><i>"Synthesis, structure and anticancer activity of copper(II) complexes of N-benzyl-2-(diethylamino)acetamide and 2-(diethylamino)-N-phenylethylacetamide"</i> Amit P. Singh, Nagendra Kaushik, Akhilesh K. Verma and Rajeev Gupta. <i>Ind. J. Chem.</i> 2011, 50A, 474-483</p>	<p>~1.0 (19)</p>
Year 2010-2006		
25	<p><i>Iodine-catalyzed and solvent-controlled Regioselective electrophilic cyclization and oxidative esterification of ortho-alkynyl aldehydes: An easy access to pyranoquinolines, pyranoquinolinones and isocumarins"</i> Akhilesh K. Verma,* Trapti Aggarwal and Vineeta Rustagi <i>J. Org. Chem.</i> 2010, 75, 7691-7703</p>	<p>4.33 (92)</p>
24	<p><i>"Iodine-catalyzed and solvent-controlled selective electrophilic cyclization and oxidative esterification of ortho-alkynyl aldehydes: An easy access to pyranoquinolines, pyranoquinolinones and isocumarins"</i> Akhilesh Kumar Verma,* Trapti Aggarwal Vineeta Rustagi, and Richard C. Larock* <i>Chem. Comm.</i> 2010, 46, 4064-4066 (Published as an advance article)</p>	<p>6.22 (102)</p>
23	<p><i>"Copper-Catalyzed Tandem Synthesis of N-Fused Isoquinolines"</i> Akhilesh K. Verma,* Tanay Kesharwani, Jaspal Singh, Vibha Tandon and Richard C. Larock* <i>SYNFACTS</i> 2009, 4, 0434-0434 (Highlight of <i>Angew. Chem Int. Ed.</i> 2009, 48, 1138-1143)</p>	
22	<p><i>"Studies in Acyl C-H Activation via Aryl to Acyl Through Space Migration of Palladium"</i> Tanay Kesharwani, Akhilesh K. Verma, Daniel Emrich, Richard C. Larock* <i>Org. Lett.</i> 2009, 11, 2591-2593</p>	<p>6.09 (48)</p>
21	<p><i>"Benzotriazole: An Excellent Ligand for the Copper-Catalyzed N-Arylation of Indoles"</i> Akhilesh Kumar Verma,* Jaspal Singh, and Richard C. Larock <i>Tetrahedron</i> 2009, 65, 8434-8439</p>	<p>2.33 (62)</p>
20	<p><i>"A Copper-Catalyzed Tandem Synthesis of Indolo- and Pyrrolo[2,1-a]isoquinolines"</i> Akhilesh Kumar Verma,* Tanay Kesharwani, Jaspal Singh, Vibha Tandon and Richard C. Larock* <i>Angew. Chem Int. Ed.</i> 2009, 48, 1138-1143 Note: First ever paper published from Delhi University as corresponding author Contribution: Designed and directed the project. I have prepared the manuscript</p>	<p>15.33 (196)</p>

	and entire supporting information and communicated the MS from the University of Delhi, Note: The designed Chemistry of the above paper (ACIE 2009) was based on the two papers published in Tetrahedron Letters (<i>Tet. Lett.</i> 2007 , <i>48</i> , 7199-7202; <i>Tet. Lett.</i> 2007 , <i>48</i> , 4207-4210) in the year 2007 on Copper-Catalysed coupling reactions. Some part of the designed work was carried out by me during my BOYSCAST Fellowship at Iowa State University, Iowa, USA in the Laboratory of Prof. R.C. Larock.	
19	<i>"Synthesis, Structure and Biological Activity of Copper(II) Complexes of 4-(2-Pyridylmethyl)-1,7-dimethyl-1,4,7-triazonane-2,6-dione and 4-(2-Pyridylethyl)-1,7-dimethyl-1,4,7-triazonane-2,6-dione"</i> Amit P. Singh, Nagendra K. Kaushik, Akhilesh K. Verma , Gita Hundal and Rajeev Gupta. <i>Eur. J. Med. Chem.</i> , 2009 , <i>44</i> , 1607-1614	6.51 (48)
18	<i>"Synthesis, Characterization and Antibacterial Activity of Cobalt(III) Complexes With Pyridine–Amide Ligands"</i> Anurag Mishra, Nagendra K. Kaushik, Akhilesh K. Verma and Rajeev Gupta. <i>Eur. J. Med. Chem</i> , 2008 , <i>43</i> , 2189-2196.	6.51 (111)
17	<i>"Studies on Structural and Functional Aspects of Human Telomeric RNA proteins"</i> . Piyush Bihari Lal, Naresh Kumar, Tasleem Arif, Akhilesh K. Verma , Sharma GL, Rajesh Dabur. <i>African. J. of Micro. Res.</i> , 2008 , <i>2</i> , 126-130	~1.0
16	<i>"Triethylammonium acetate (TEAA): A Recyclable Inexpensive Ionic Liquid Promotes the Chemoselective aza- and Thia-Michael Reactions"</i> Akhilesh K. Verma ,* Pankaj Attri, Varun Chopra, Rakesh K. Tiwari, Ramesh Chandra <i>Monatsh Chem</i> 2008 , <i>139</i> , 1041–1047	1.34 (56)
15	<i>"A General and Efficient Cui/Bth Catalyzed Coupling of Aryl Halides With Thiols"</i> Akhilesh K. Verma ,* Jaspal Singh and Ritu Chaudhary. <i>Tetrahedron Letters</i> , 2007 , <i>48</i> , 7199-7202.	2.27 (147)
14	<i>"Benzotriazole: An Excellent Ligand For Cu-Catalyzed N-Arylation of Imidazoles With Aryl And Heteroaryl Halides"</i> Akhilesh K. Verma ,* Jaspal Singh, V. Kasi Sankar, Ritu Chaudhary and Ramesh Chandra. <i>Tetrahedron Letters</i> , 2007 , <i>48</i> , 4207-4210.	2.27 (115)
13	<i>"Synthesis and In-vitro Cytotoxicity of Haloderivatives of Noscapine"</i> Akhilesh Kumar Verma *, Sandhya Bansal, Jaspal Singh, Rakesh Kumar Tiwari, V. Kasi Sankar, Vibha Tandon and Ramesh Chandra. <i>Bioorganic & Medicinal Chemistry</i> , 2006 , <i>14</i> , 6733-6736.	3.64 (39)
12	<i>"Synthesis, Characterization and in-vitro Biological Studies of Novel Cyano Derivatives Of N-Alkyl And N-Aryl Piperazine"</i> Preeti Chaudhary, Surendra Nimesh, Veena Yadav, Akhilesh K. Verma *, Rupesh Kumar. <i>Eur. J. Med. Chem</i> ; 2006 , <i>42</i> , 471-476.	6.51 (20)
11	<i>"Synthesis of Microtubule-Interfering Halogenated Noscapine analogs That Perturb Mitosis in Cancer Cells Followed By Cell Death"</i> Ritu Aneja, Surya N. Vangapandu, Manu Lopus, Vijaya G. Viswesarappa, Neerupma Dhiman, Akhilesh Verma , Ramesh Chandra, Dulal Panda, Harish C. Joshi. <i>Biochemical Pharmacology</i> , 2006 , <i>72</i> , 415-426.	5.09 (84)

10	"Synthesis, antibacterial activity and QSAR studies of 1, 2-disubstituted-6,7-dimethoxy-1, 2, 3, 4-tetrahydroisoquinolines" Rakesh Kumar Tiwari, Akhilesh K. Verma* , Jaspal Singh, Devender Singh, Anil Chhillar, and Ramesh Chandra. <i>Eur. J. Med. Chem</i> ; 2006 , <i>41</i> , 40-49.	6.51 (55)
09	"Synthesis and Antibacterial Activity of Substituted 1,2,3,4-tetrahydropyrazino [1,2-a]indoles" Rakesh Kumar Tiwari, Devender Singh, Jaspal Singh, Vibha Yadav, Ajay K. Pathak, Rajesh Dabur, Anil K. Chhillar, Rambir Singh, G. L. Sharma, Ramesh Chandra and Akhilesh K. Verma* . <i>Bioorganic & Medicinal Chemistry Letters</i> ; 2006 , <i>16</i> , 413-416.	2.66 (96)
08	"Synthesis and Antimicrobial Aactivity of N-alkyl and N-aryl Piperazine Derivatives" Preeti Chaudhary, Rupesh Kumar, Devender Singh, Vibha Yadav, Anil Chhillar, G. L. Sharma, Akhilesh K. Verma* , and Ramesh Chandra. <i>Bioorganic & Medicinal Chemistry</i> , 2006 , <i>14</i> , 1819-1826	2.66 (194)
07	"Synthesis and Antifungal Activity of Substituted 1,2,3,4-tetrahydropyrazino[1,2-a]indoles" Rakesh Kumar Tiwari, Devender Singh, Jaspal Singh, Vibha yadav, Anil Chhillar, G. L. Sharma, Akhilesh K. Verma , and Ramesh Chandra. <i>Bioorganic & Medicinal Chemistry</i> , 2006 , <i>14</i> , 2747-2752.	3.64 (52)
06	"An Efficient Synthesis of 1,5-benzodiazepine Derivatives Catalyzed by Silver Nitrate" Rupesh Kumar, Preeti Chaudhary, Surendra Nimesh, Akhilesh K. Verma and Ramesh Chandra. <i>Green Chem.</i> , 2006 , <i>8</i> , 519–521.	9.4 (105)
Year 2005-2002		
05	"Cu-nanoparticles: A Chemoselective Catalyst for the Aza-Michael Reactions of N-Alkyl- and N-Arylpiperazines with Acrylonitrile" Akhilesh K. Verma* , Rupesh Kumar, Preeti Chaudhary, Amit Saxena, Ravi Shankar, Suhbo Mozumdar and Ramesh Chandra. <i>Tetrahedron Letters</i> , 2005 , <i>46</i> , 5229-5232.	2.27 (63)
04	"Highly Efficient One-Pot Synthesis of 1-Substituted 1,2,3,4-Tetrahydropyrazino[1,2-a]indoles" Rakesh K. Tiwari, Jaspal Singh, Devender Singh, Akhilesh K. Verma* , and Ramesh Chandra. <i>Tetrahedron</i> , 2005 , <i>61</i> , 9513-9518	2.33 (29)
03	"Low-temperature ¹ H and ¹³ C NMR Spectra of N-Substituted 1,2,3,4-tetrahydropyrazino[1,2-a]indoles" Alan R. Katritzky, Akhmedov N.G., Myshakin EM, Akhilesh K. Verma , Dennis Hall C. <i>Magnetic Resonance in Chemistry</i> , 2005 , <i>43</i> , 351-358.	1.61 (06)
02	"Novel Synthesis of 1,2,3,4-Tetrahydropyrazino[1,2-a]indoles" Alan R. Katritzky, Akhilesh K. Verma , Hai-Ying He and Ramesh Chandra. <i>J. Org. Chem</i> , 2003 ; <i>68</i> ; 4938-4940.	4.33 (36)
01	"Stereoselective Syntheses of Chiral (3 <i>S</i> ,9 <i>bS</i>)-1,2,3,9 <i>b</i> -tetrahydro-5 <i>H</i> -imidazo[2,1- <i>a</i>]isoindol-5-ones" Alan R. Katritzky, Hai-Ying He and Akhilesh K. Verma <i>Tetrahedron Asymmetry</i> , 2002 , <i>13</i> , 933-938.	2.37 (25)

Patents /Technology Transferred

We have discovered a novel, metal-free and cost-effective method for the deuteration of N, O and S-heterocycles/carbocycles. He has successfully synthesized Toluene- α , α , α -d₃ (NMR solvent), Aspirin-d₄ and Paracetamol-d₅ in gram scale using developed chemistry. **We have been granted a patent entitled “NOVEL HIGH YIELDING, ECONOMICAL, ECO-FRIENDLY AND SELECTIVE METHOD FOR THE PREPARATION OF DEUTERATED ALKYL ARENES”** for the selective deuteration of toluene (Toluene- α , α , α -d₃) and arenes.

Patent no: E-101/20744/2017-DEL (Application no: 201711013462)

The salient features of invention are:

1. Developed basic protocol applicable for the deuteration of toluene-d₃ and its derivatives selectively.
 1. Metal, ligand and additive free process for isotopic exchange of selective methyl proton.
 2. Selectivity towards the methyl hydrogen and aromatic hydrogen.
 3. Reduced toxicity
 4. More than 15-fold decline in the cost:

Name of the firm: Santa Cruz Biotechnology Product Name: Toluene- α , α , α -d ₃ Catalog no.: sc-229471 Price: \$440.00 for 5g	Name of the firm: Sigma Aldrich Product Name: Toluene- α , α , α -d ₃ Catalog no.: 487074 ALDRICH Price: \$492.50 for 5g
--	---

Invited Lectures (abroad)

5. **Gainesville, Florida, USA:** *“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
2. **New York, USA** *“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.
3. **University of California, Santa Barbara, USA** *“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
4. **IPN, Mexico City, Mexico** *“Heterocycles via C-H Activation and Electrophilic Cyclization”* 4th March 2016, Department of Chemistry, IPN, Mexico City, Mexico.
5. **Mexico City, Mexico** *“Regioselective Synthesis of Functionalized Carbazoles from Indoles via Triple/Double C-H Functionalization”* 3rd March 2016, Department of Chemistry, CINVISTAV, Mexico City, Mexico.
6. **Grasmere, UK** *“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**)
7. **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.
8. **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

9. **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
10. **Singapore.** “*Alkyne Annulation/ Electrophilic Cyclization: A Modern Tool for the Construction of Small Heterocycles and Natural Products-like Scaffolds*” **15th Asian Chemical Congress** 19th to 23rd August 2013 organized by Asian Chemical Society at Santosa, Singapore. [Invited Talk]
11. **Kingston, Rhode Island, USA:** “*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.
12. **Kingston, Rhode Island, USA:** “*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
13. **Gainesville, Florida, USA:** “*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
14. **Goettingen, Germany:** “*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.
15. **Glasgow, UK.** *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*”

Lectures/Symposia/Conferences in India

1. “*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
2. “*Regiocontrolled Electrophilic Cyclization: A Novel Approach for the Synthesis of Pyrrolo[3,2-c]quinolines (Core Nucleus of Natural Product Martinelllic Acid)*” **Akhilesh Kumar Verma** 20-22nd Nov. **2014.** **4th Biennial International Conference on DDNPTM** organized by NIPER Mohali. [Invited Talk].
3. “*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].
4. “*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].

5. "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]
6. "O-Haloaryl Alkynes/O-Alkynylaldehydes: Versatile Synthones for the Construction of Small Heterocycles and Natural Products-like Scaffolds" **Akhilesh Kumar Verma** 20th Jan 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 during January 21st -23rd, 2013. [Invited Talk]
7. "Hydroamination and Electrophilic Cyclization of Alkynes: A Versatile Tool for the Regioselective Synthesis of Fused Heterocyclic Scaffolds" **Akhilesh Kumar Verma**, 2-4th August 2012, "Chemistry and Chemical Biology of Natural Products" organized by the Indian Institute of Chemical Technology (IICT), Hyderabad. [Invited Talk].
8. "Electrophilic Cyclization of Alkynes: A Modern Tool for the Synthesis of Heterocyclic Molecules, Natural Products-like and π -Conjugated Scaffolds" **Akhilesh Kumar Verma**, 20th March 2012, National Seminar on "Emerging Trends in Chemical Sciences" organized by School of Chemical Sciences, Devi Ahilya University, Indore [Invited Talk].
9. "Metal-Catalyzed Electrophilic Cyclization of Alkynes: A Versatile Tool for the Synthesis of Heterocycles" **Akhilesh Kumar Verma** National Symposium in Chemistry in 21st Century 2011, 23rd to 24th December 2011, organized by the Department of Chemistry, Guru Nanak Dev University, Amritsar. [Invited Talk].
10. "Synthetic Approaches Towards Small Heterocyclic Molecules, Natural Products-like and π -Conjugated Compounds by the Electrophilic Cyclization of Alkynes" **Akhilesh Kumar Verma** SMNP 2011, 14th to 15th October 2011, Organized by Department of Chemistry, Annamalai University, Tamilnadu [Invited Talk].
11. "Novel Synthetic Approaches Towards Heterocyclic Molecules, Natural Products-like and π -Conjugated Scaffolds by the Electrophilic Cyclization of Alkynes" **Akhilesh Kumar Verma** 7th Indo-French Conference in Organic Synthesis Organized by National Chemical Laboratory (CSIR), Pune [Invited Talk].
12. Synthetic approaches towards small heterocyclic molecules, natural products-like and π -conjugated compounds by electrophilic cyclization of alkynes **Akhilesh Kumar Verma** 22nd to 25th September 2011 in the North zone meeting, Organized by CRSI at Jammu, [Invited Talk].
13. "Synthesis of Nitrogen and Oxygen Heterocycles by the Regioselective Electrophilic Cyclization of Alkynes" **Akhilesh Kumar Verma** 31st August to 4th July 2011 organized by ICHC at Glasgow, UK. "23rd International Congress on Heterocyclic Chemistry, (Oral Presentation)
14. "Synthesis of biologically important fused heterocycles by annulations and electrophilic cyclization of alkynes" **Akhilesh Kumar Verma** 3-5th March 2011 organized by CDRI – NIPER (RBL) at CDRI LUCKNOW [Invited Talk].
15. "Copper-Catalyzed Regioselective Tandem Synthesis of Fused-Heterocycles by the Preferential Addition of N-Heterocycles on *ortho*-haloalkynes followed by Intramolecular C-2 Arylation" **Akhilesh Kumar Verma** RASC 10-12th February. 2011, Dibrugarh, India. [Invited Talk].

16. "Tandem Synthesis of Indolo, Pyrrolo[2,1-a]isoquinolines, Naphthyridines, Pyranoquinolines, Pyranoquinolinones and Isocumarins by the Electrophilic Cyclization of Alkynes" **Akhilesh Kumar Verma** 4-7 februray. **2011** organized by ISCB, Rajkot, India. [Invited Talk].
17. "Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines: A Direct Approach to Alkaloids, Cryptaustoline and Cryptowpline Nucleus" **Akhilesh Kumar Verma** DDNPTM conference 20-24th Nov. **2010** organized by NIPER Mohali. [Invited Talk].
18. Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines: A Direct Approach to Alkaloids, Cryptaustoline and Cryptowpline Nucleus **Akhilesh Kumar Verma** 05-08th December 2010 organized by National Organic Symposium Trust at Goa. [Invited Talk]
19. "Metal-catalyzed egioselective tandem synthesis of indolo, pyrrolo[2,1-a]isoquinolines and naphthyridines" **Akhilesh Kumar Verma** 23rd June **2010** [Invited talk at Department of Chemistry, Vikram University Ujjain, M.P.]
20. "Copper-Catalyzed Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines: A Direct Approach to Dibenzopyrrocoline Alkaloids, Cryptaustoline and Cryptowpline" **Akhilesh Kumar Verma** [Invited talk delivered in "National seminar on current trends in chemistry" 12-13 May **2010**, Organized by the Department of Chemistry, APS University Rewa, M.P.]
21. "Copper-Catalyzed Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines and Identification of Synthesize Regioisomers by X-Ray Crystallographic Analysis" **Akhilesh Kumar Verma** and Ritu Chaudhary [Invited talk delivered in "Recent Advances in Analytical Sciences, 12-14 April **2010**, organized by the Department of Chemistry, University of Himanchal Pradesh, Shimla (India)
22. "Copper-Catalyzed Regioselective Tandem Synthesis of Indolo and Pyrrolo[2,1-a]isoquinolines: A Direct Approach to Dibenzopyrrocoline Alkaloids, Cryptaustoline and Cryptowpline" **Akhilesh Kumar Verma** [Oral talk: CTDDR-2010, 17-21st Feb. 2010, Organized by the Central Drug Research Institute, (CDRI) Lucknow (India)
23. "Regioselective Tandem Synthesis of Fused Polyheterocycles: A Direct Approach To Dibenzopyrrocoline Alkaloids" **Akhilesh Kumar Verma** [Invited talk: T3D-2010, 5-8th January **2010**, Organized by the Department of Chemistry, University of Delhi, Delhi (India)
24. "Regioselective tandem synthesis of polyheterocycles by the copper-catalyzed preferential addition of *n*-heterocycles on ortho-haloalkynes followed by intramolecular arylation" **Akhilesh Kumar Verma**,* Ritu Chaudhary, Jaspal Singh, and Richard C. Larock. [Poster Presentation: TENTH TETRAHEDRON SYMPOSIUM, 23rd to 26th June **2009** at Paris, France.
25. "Application of benzotriazole and its derivatives as novel ligands in copper and palladium catalyzed coupling reactions: Construction of polyheterocycles by tandem reaction" **Akhilesh Kumar Verma**, Jaspal Singh. (Invited Talk at 10th Annula Florida Heterocyclic and Synthetic IUPAC Sponsored Conference, 8th -11th March, **2009**, Gainesville, Florida, USA): Could not attend
26. "Synthesis of indolo- and pyrrolo[2,1-a]isoquinolines and [1,2-a]quinolines by the electrophilic cyclization of alkynes" **Akhilesh Kumar Verma**, Jaspal Singh, and Richard C.

Larock. (**Oral Talk:** at 237th ACS National Meeting, 22nd-26th March **2009**, Salt Lake City, UT, USA): Could not attend

27. "Synthesis of polycyclic heteroaromatics by copper-catalyzed tandem amination and intramolecular electrophilic cyclization" **Akhilesh Kumar Verma**, Tanay Kesharwani, Jaspal Singh, Vibha Tandon and Richard C. Larock. (**Oral Talk** at 236th ACS National Meeting, 17-21st August, 2008, Philadelphia, PA, USA)
28. "Studies in aryl to acyl migration "through space" palladium migration" Tanay Kesharwani, Daniel E. Emrich, **Akhilesh Kumar Verma**, and Richard C. Larock. (**Poster Presentation:** at 236th ACS National Meeting, 17-21st August **2008**, Philadelphia, PA, USA)
29. 42nd ACS Midwest Regional Meeting. (7-10 Nov. 2007, 5100, Rockhills Road, Kansas City, MO)
30. "Green synthesis: TEAA catalyzed synthesis of 1,2,3,4'-tetrahydropyridin-2-ylindoles" Pankaj Attri, Varun Chopra, Nagendra K. Kaushik, R. P. Singh, Ramesh Chandra and Akhilesh Kumar Verma (3rd Indo-Italian Workshop on Chemistry and Biology of Antioxidants 2007, organized by CSIR, Embassy of Italy and Dept. of Chemistry, Univ. of Delhi.)
31. Second International Symposium on Green/Sustainable Chemistry. (10-13 Jan 2006), Organized by Dept. of Chemistry University of Delhi.
32. Second Indo-US workshop on Green Chemistry. (7-8, Jan. 2006) Organized by Dept. of Chemistry University of Delhi.
33. ACS-CRSI Organic Chemistry conference. (Jan 2006, NCL Pune)
34. International Conference on Recent Advances in Biomedical and Therapeutic Sciences (13th – 15th Jan, 2004) held by Bundelkhand University, Jhansi in Collaboration with University of Netherland in Jhansi, INDIA.
35. ICOB-4 & ISCNP-24, International Conference on Biodiversity and Natural Products: Chemistry and Medicinal Applications, New Delhi, India. 26-31 January 2004.
36. CBISNF-2004, Chemistry Biology Interface Synergistic New Frontiers, Nov 21-26, 2004, New Delhi, India, Organized by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi.
37. 5th Annual symposium on Frontiers in biomedical Research. Organised by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi, India April 14-16, 2004.
38. ACS Meeting, 7-11 April 2002, Orlando, Florida, USA
39. 3rd Florida Heterocyclic Conference, 9-11 March 2002, Gainesville, Florida, USA
40. 2nd Florida Heterocyclic Conference, 7-9 March 2001, Gainesville, Florida, USA
41. IUPAC International Symposium on Green Chemistry 11-13th Jan. 2001, University of Delhi, India
42. International Symposium on Trends in Medicinal Chemistry and Biocatalysis 26-29 January 2000, University of Delhi, India
43. National Seminar on Perspectives in Interfacial Areas of Chemistry and Biology 20-22 January, 1998 University of Delhi, India.
44. Frontiers in Biomedical Research, March 31st- April 2nd, 1998, University of Delhi, India.
45. 34th Annual Convention of Chemist, December 17-20, 1997, University of Delhi, India

46. International Seminar on Interface between Chemistry and Biology, January 1, 1997, Dr. B.R. Ambedkar Center for Biomedical Research, University of Delhi, India.
47. Symposium on Current Trends in Clinical and Experimental Lung Research, November 20-22, 1996, National Institute of Immunology, Delhi, India
48. 10th IUPAC Symposium on Asymmetric Synthesis IICT (1994) Hyderabad, A.P.

Patents /Technology Transferred

We have discovered a novel, metal-free and cost effective method for the deuteration of N, O and S-heterocycles/carbocycles. He has successfully synthesized Toluene- α , α , α -d₃ (NMR solvent), Aspirin-d₄ and Paracetamol-d₅ in gram scale using developed chemistry.

We have filed a patent entitled **“NOVEL HIGH YIELDING, ECONOMICAL, ECO-FRIENDLY AND SELECTIVE METHOD FOR THE PREPARATION OF DEUTERATED ALKYL ARENES”** for the selective deuteration of toluene (Toluene- α , α , α -d₃) and arenes.

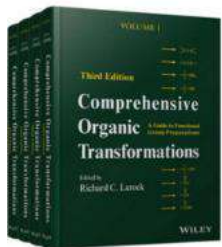

Patent no: E-101/20744/2017-DEL (Application no: 201711013462)

The salient features of invention are:

1. Developed basic protocol applicable for the deuteration of toluene-d₃ and its derivatives selectively.
6. Metal, ligand and additive free process for isotopic exchange of selective methyl proton.
7. Selectivity towards the methyl hydrogen and aromatic hydrogen.
8. Reduced toxicity
9. More than 15 fold decline in the cost:

<p>Name of the firm: Santa Cruz Biotechnology</p> <p>Product Name: Toluene- α, α, α-d₃</p> <p>Catalog no. : sc-229471</p> <p>Price: \$440.00 for 5g</p>	<p>Name of the firm: Sigma Aldrich</p> <p>Product Name: Toluene- α, α, α-d₃</p> <p>Catalog no. : 487074 ALDRICH</p> <p>Price: \$492.50 for 5g</p>
--	--

Book Chapter:

<ol style="list-style-type: none"> 1. Comprehensive: Organic Transformations: 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. 2. Protecting-Group-Free Organic Synthesis: Improving Economy and Efficiency. Publishers: Rodney A. Fernandes. Wiley Publication. 	 
---	---

Supervision of awarded M.Sc. dissertation: (> 50)

Selected thesis:

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 evaluation of Polycyclic quinoxalines. University of Delhi
4. Nimkar, C. 2009.
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 methodology. 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.

Membership and Fellowship of Professional/Academic Bodies, Societies etc

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

Reviewer Reviewing following Journals

- | | |
|--|---|
| 1. <i>Chemical Reviews</i> (ACS) | 2. <i>Chem. Commun.</i> |
| 3. <i>Organic Letters</i> | 4. <i>J. Org. Chem.</i> |
| 5. <i>Adv. Syn. Catalysis</i> | 6. <i>RSC. Advances</i> |
| 7. <i>Green. Chem.</i> | 8. <i>Tetrahedron Letters.</i> |
| 9. <i>Eu. J. Org. Chem</i> | 10. <i>SYNN LETT</i> |
| 11. <i>Chemistry: An Asian Journal</i> | 12. <i>Org. Bioorganic Chemistry (OBC)</i> |
| 13. <i>Synthetic Communication</i> | 14. <i>Bioorganic & Medicinal Chemistry</i> |
| 15. <i>Eu. J. Med. Chemistry</i> | 15. <i>Archive Pharma</i> |
| 17. <i>Heterocycles</i> | 18. <i>Catalysis Letters</i> |

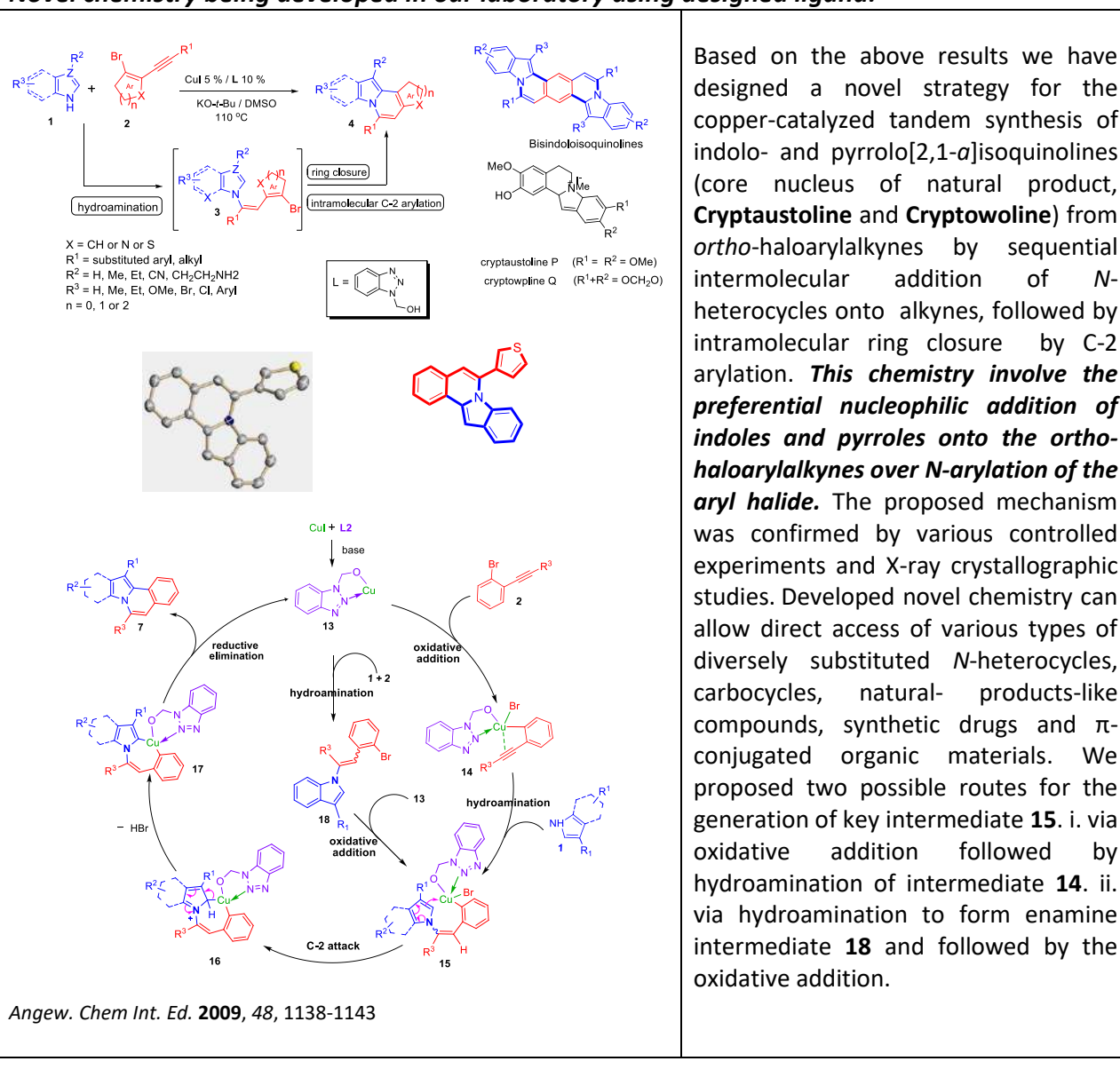
Note: Reviewed > 50 manuscript from *Chem. Commun.*

Scientific Contribution

1. Discovery of benzotriazole and its derivatives as efficient and inexpensive ligands for the coupling reactions and their application in the tandem synthesis of heterocycles/natural products/organic materials

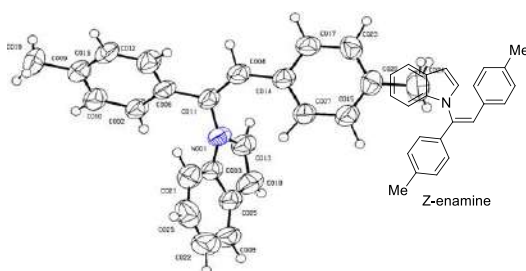
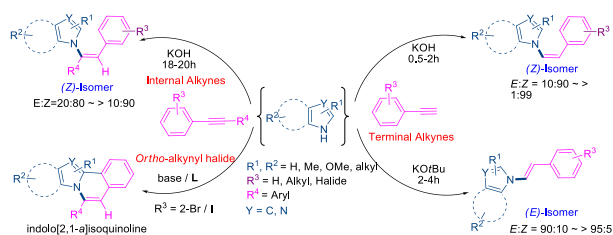
Benzotriazole has been much explored by the Katritzky group as a synthetic auxiliary in a number of transformations due to its interesting properties. We have first time noticed that this air and moisture stable molecule '**benzotriazole**' has excellent coordination capability which could be favorable for stabilizing catalytic species and assisting the catalytic cycle. We started our journey by using benzotriazole as Ligand for the copper-catalyzed C-N and C-S coupling reaction. Encouraged by preliminary results we have designed a large number of benzotriazole based ligand for the various coupling reactions and observed the designed ligand (hydroxymethyl)benzotriazole was more efficient than benzotriazole for C-N coupling reaction.

Novel chemistry being developed in our laboratory using designed ligand:

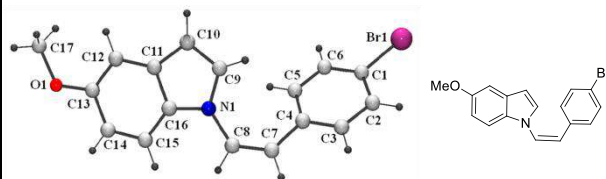
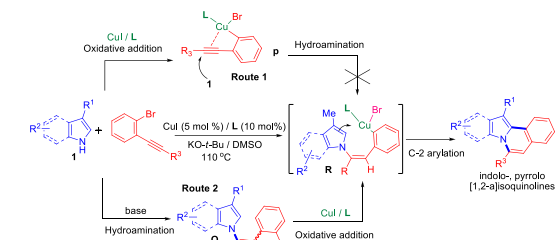
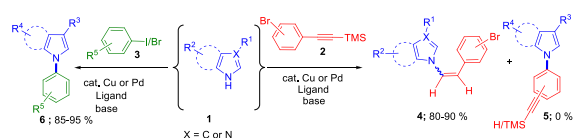


Based on the above results we have designed a novel strategy for the copper-catalyzed tandem synthesis of indolo- and pyrrolo[2,1-*a*]isoquinolines (core nucleus of natural product, **Cryptaustoline** and **Cryptowoline**) from *ortho*-haloarylalkynes by sequential intermolecular addition of *N*-heterocycles onto alkynes, followed by intramolecular ring closure by C-2 arylation. **This chemistry involve the preferential nucleophilic addition of indoles and pyrroles onto the ortho-haloarylalkynes over N-arylation of the aryl halide.** The proposed mechanism was confirmed by various controlled experiments and X-ray crystallographic studies. Developed novel chemistry can allow direct access of various types of diversely substituted *N*-heterocycles, carbocycles, natural-products-like compounds, synthetic drugs and π -conjugated organic materials. We proposed two possible routes for the generation of key intermediate **15**. i. via oxidative addition followed by hydroamination of intermediate **14**. ii. via hydroamination to form enamine intermediate **18** and followed by the oxidative addition.

Conformation of the Proposed Mechanism



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

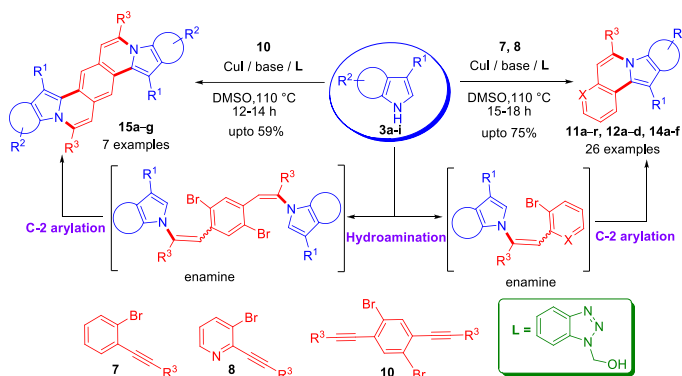


Org. Lett. 2012, 14, 1106-1109.

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 (Scheme 2, route 2).

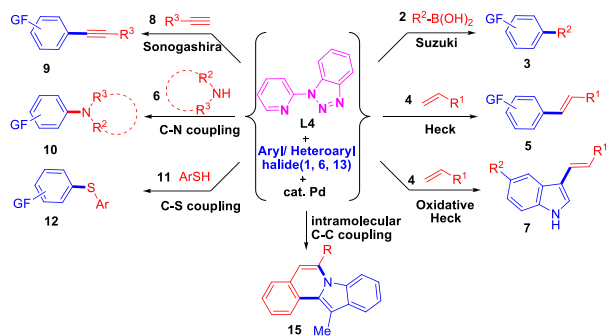
Synthetic application: Synthesis of 1,6-Naphthyridines, bisindolo-, and pyrrolo[2,1-*a*]isoquinolines



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.

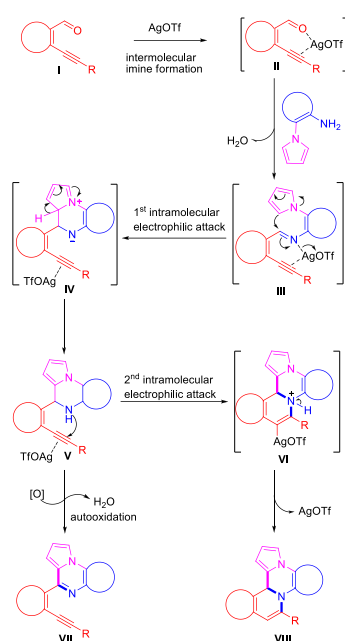
2-(1-Benzotriazolyl)pyridine (BtPy): A Novel Inexpensive and Robust Ligand for the Palladium-Catalyzed C-C (Suzuki, Heck, Oxidative-Heck, Sonogashira), C-N and C-S Coupling Reactions:



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.

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

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

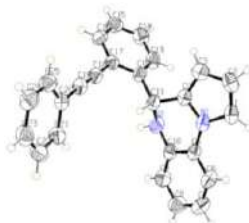


Design and synthesis of biologically relevant, drug-like small molecules to perturb and analyze biological systems is one of the main challenges in the medicinal chemistry. Diversity Oriented Synthesis (DOS) of small molecules is new algorithm that enables efficient synthesis of complex molecules. This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

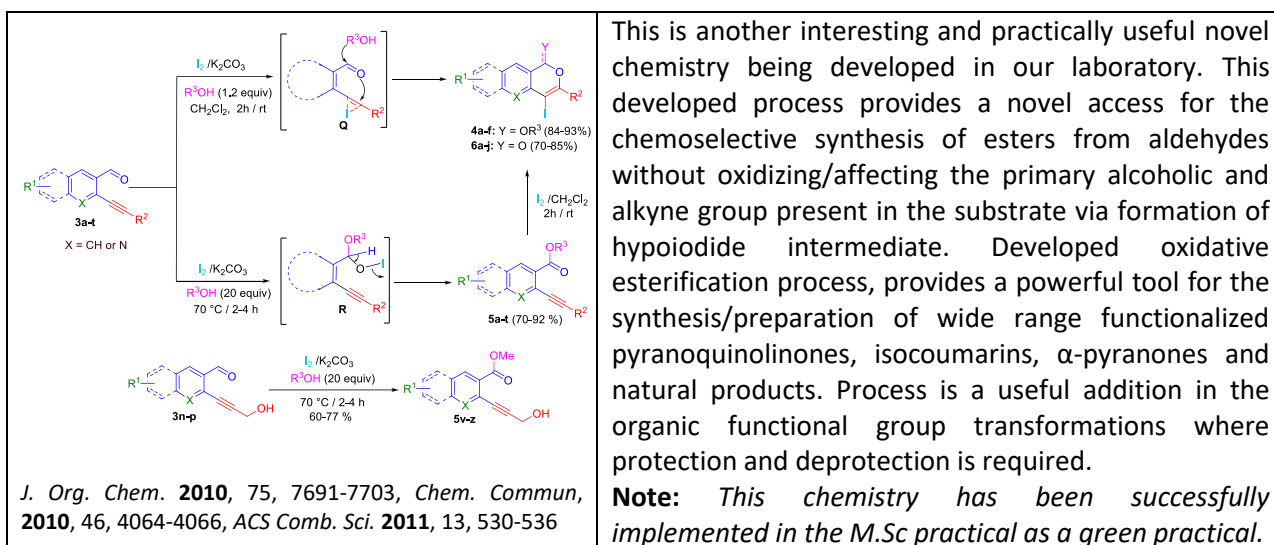
In this project we have designed a novel cascade synthetic strategy for the “**Diversity Oriented Synthesis (DOS) of Over Hundred Heterocyclic/Natural-Product-Likes and π -Conjugated Scaffolds**”. Strategy involves the construction of designed scaffolds by the reaction of *ortho*-akynyaldehydes with 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 stereoselective and diastereoselective 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.

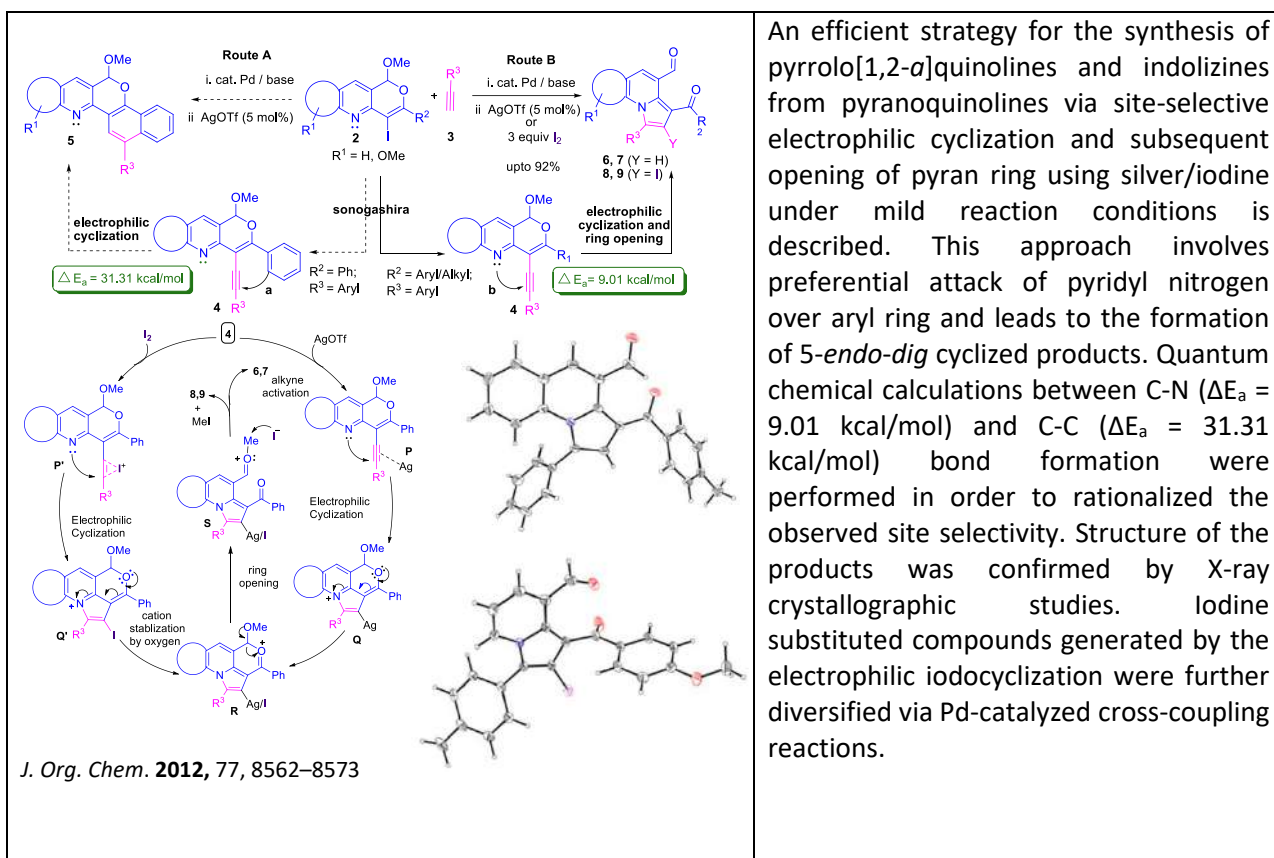
Green Chem. **2011**, *13*, 1640-1643; *Eur. J. Org. Chem.* **2012**, 4590-4602



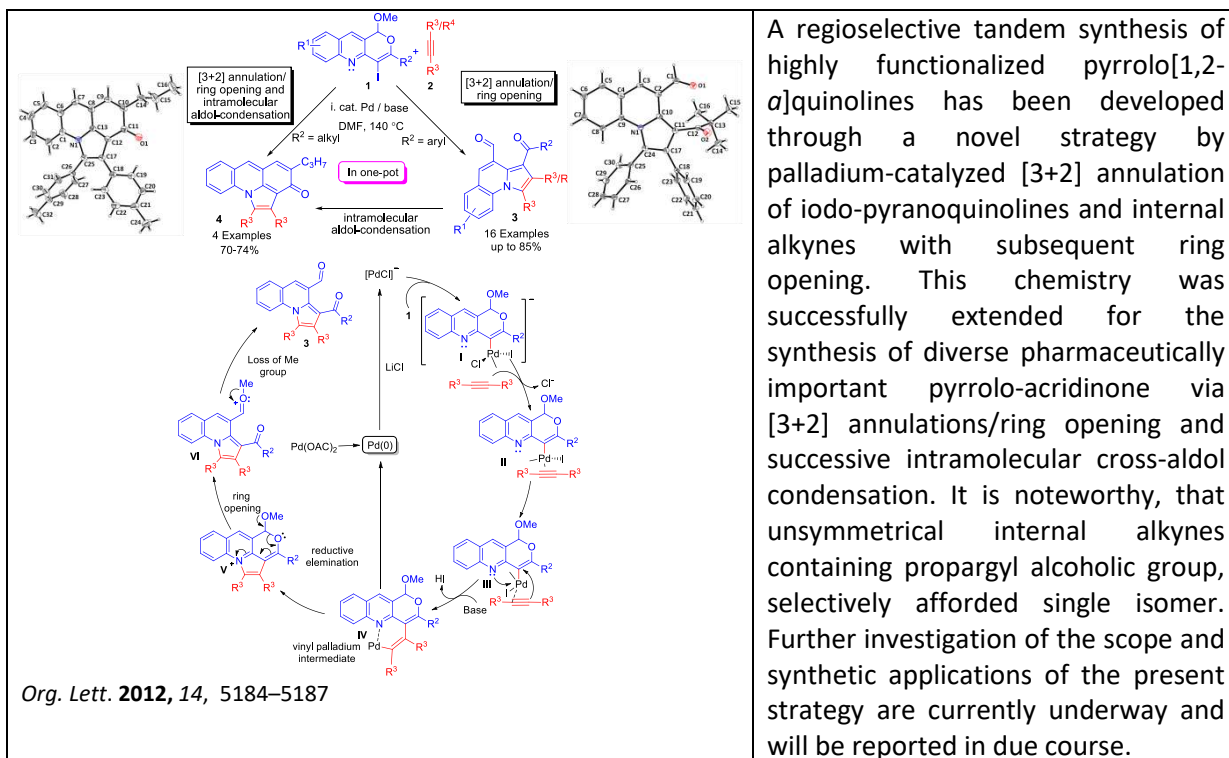
3. Iodine-mediated chemoselective direct oxidative esterification of aldehydes without affecting alkynes and 1° alcoholic groups: New addition in the functional group transformations



4. Site-selective electrophilic cyclization and subsequent ring opening: An efficient route to pyrrolo[1,2-a]quinolines and indolizines

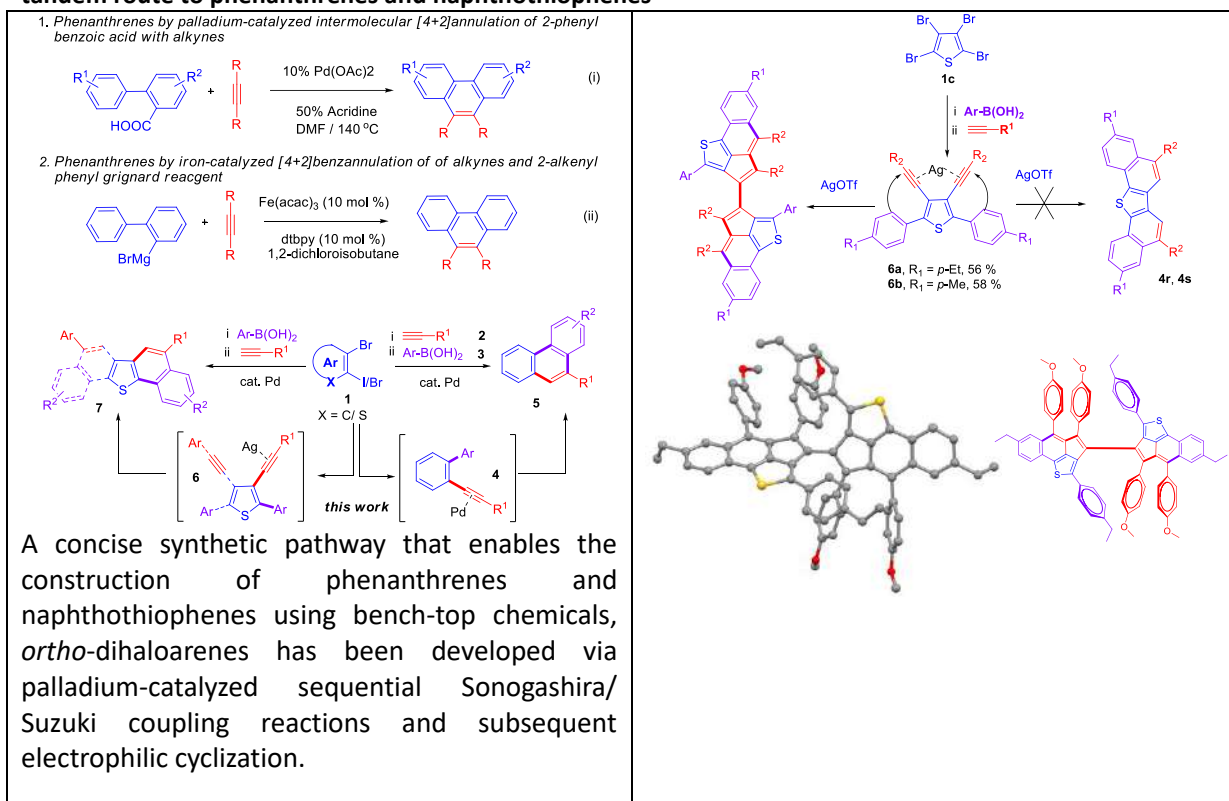


5. Palladium-catalyzed regioselective [3+2] annulation of internal alkynes and iodo-pyranoquinolines with concomitant ring opening: Efficient approach for the synthesis of pyrrolo[1,2-*a*]quinolines and acridones

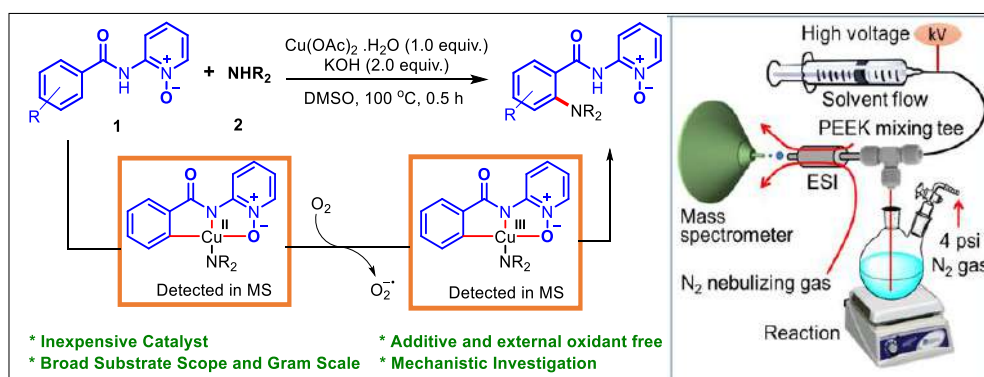
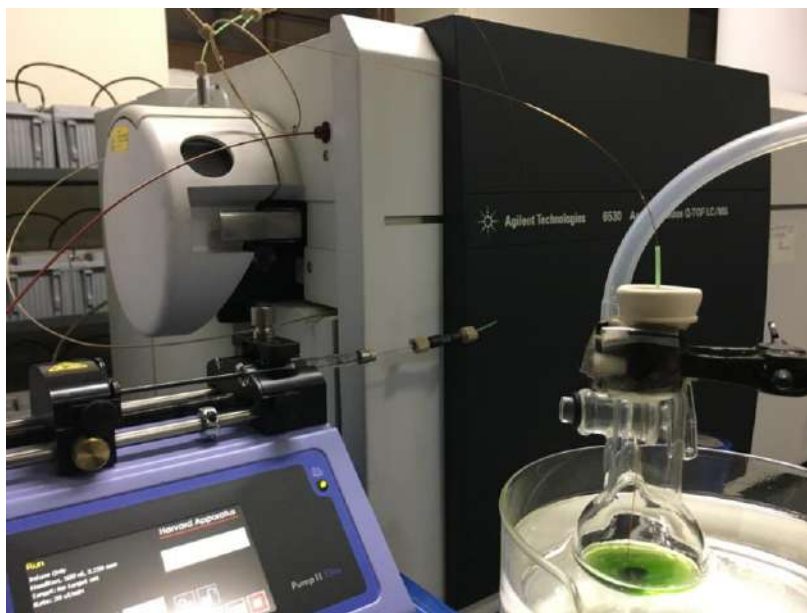


A regioselective tandem synthesis of highly functionalized pyrrolo[1,2-*a*]quinolines has been developed through a novel strategy by palladium-catalyzed [3+2] annulation of iodo-pyranoquinolines and internal alkynes with subsequent ring opening. This chemistry was successfully extended for the synthesis 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.

6. Palladium-catalyzed sequential sonogashira/suzuki coupling and concomitant cyclization: A concise tandem route to phenanthrenes and naphthothiophenes



7. Application of Mass Spectrometry: Mechanistic Analysis by Capturing Fleeting Intermediates



Copper-mediated highly efficient direct ortho C–H amination of arenes has been accomplished under external oxidant and additive free condition. The use of free primary and secondary amines as aminating agents makes the strategy more effective. The reaction tolerates a wide range of functional groups. Using online electrospray ionization mass spectrometry (ESI-MS), transient intermediates including copper complexes in different oxidation states were captured that implicates the intriguing possibility of two pathways: (a) Cu^{III}-Cu^I and (b) Cu^{II}-Cu⁰. DFT calculations, in the current C–H amination reaction shows that the Cu^{III} intermediate so formed could harness the exergonicity of Cu^{III}-Cu^I reductive elimination, suggesting it to be more favorable pathway. The results provide guiding principles to design a catalytic cycle to explore the mechanism of this transformation.

Chem. Commun., **2019**,55, 9359-9362; *J. Org. Chem.* **2019**, 84, 8067-8079

8. Development of Diacetylene Based Colorimetric Radiation Sensors for Blood Irradiator Dosimetry and Colorimetric Quantification of Narrow Band UVB Radiation Doses in Phototherapy

