




## Faculty Details Proforma

Title	<b>Associate Professor</b>	First Name	<b>Rakesh</b>	Last Name	<b>Kumar</b>	Photograph
Designation	Associate Professor					
Address	Department of Chemistry, University of Delhi (North campus), Delhi-110 007					
Phone No (Office)	091-11-27667794 (ext. 109)					
Residence	0120-4202586					
Mobile	9810348999					
Email	rakeshkp@email.com					
Web-Page	<a href="http://www.du.ac.in/department_facultymembers.html?department_id=Chemistry">http://www.du.ac.in/department_facultymembers.html?department_id=Chemistry</a>					
<b>Educational Qualifications</b>						
Degree	University				Year	
<b>Ph.D.</b>	University of Delhi, Delhi				1990	
<b>M.Phil.</b>	GNDU, ASR				1986	
<b>PG (M.Sc.)</b>	GNDU, ASR				1984	
<b>UG (B.Sc.)</b>	GNDU, ASR				1982	
<b>Career Profile</b>						
<b>Fellowships and Awards</b>						
<ol style="list-style-type: none"><li>1. [2003] Post-Doc. Fellowship, Faculty of Science and Technology, University of New Lisbon, Portugal.</li><li>2. [1996-1997] Post-Doc. Fellowship, Faculty of Pharmacy, University of Barcelona, Spain.</li><li>3. [1988-1990] Senior Research Fellowship (SRF) by CSIR, NET.</li><li>4. [1986-1988] Junior Research Fellowship (JRF) by CSIR, NET.</li></ol>						
<b>Association With Professional Bodies (Life Memberships)</b>						
<ol style="list-style-type: none"><li>1. Indian Science Congress Association (L12996).</li><li>2. Indian Society of Analytical Scientists, Delhi Chapter (LM 1239).</li><li>3. Indian Society of Chemists and Biologists (LF591/2011).</li><li>4. Association of Carbohydrate Chemists and Technologists India (LM/237/2014).</li></ol>						
<b>Teaching Experience</b>						
[2015-Till date] <b>Associate Professor</b> , Department of Chemistry, University of Delhi.						
[1999-2015] <b>Reader/Associate Professor</b> , Department of Chemistry, Kirori Mal College, University of Delhi.						
[1995-1999] <b>Senior Lecturer</b> , Department of Chemistry, Kirori Mal College, University of Delhi.						
[1990-1995] <b>Lecturer</b> , Department of Chemistry, Kirori Mal College, University of Delhi.						

[2009-2015] M. Tech. (Chemical Synthesis and Process Technologies), Department of Chemistry, University of Delhi.

#### Administrative Assignments

- [2014-2017] Deputy Dean, Student's Welfare University of Delhi.
- [2011-2013] Foreign Students Advisor, Kirori Mal College, University of Delhi.
- [2009-2011] College Student Union Advisor, Kirori Mal College, University of Delhi.
- [2009-2010] Teacher-in-Charge, Kirori Mal College, University of Delhi.
- [2005-2009] Convenor College Portal Committee, Kirori Mal College, University of Delhi.
- [2003-2005] Convenor Chemistry Department Seminar Committee, Kirori Mal College, University of Delhi.
- [2011-2014] Member College Student Union Committee, Kirori Mal College, University of Delhi.
- [2008-2014] Member College Central Computer Committee, Kirori Mal College, University of Delhi.
- [2003-2014] Member College Portal Committee, Kirori Mal College, University of Delhi.

#### Area of Specialization

##### Synthetic Organic Chemistry/Medicinal Chemistry:

My research encompasses several areas including development of new methods for the synthesis of biologically active heterocyclic compounds and metal sensors.

Building on our strength in synthetic chemistry, we design and synthesise azasugars as glycosidase inhibitors. Traditional azasugars synthesis, starting from carbohydrate precursors, is very tedious and time-consuming. In order to expedite the synthetic process, we have developed novel synthetic route for the synthesis of highly complex glycosidase inhibitor azasugars starting from dihydropyridines.

My research interest also includes design and synthesis of derivatives of Isatin as anticancer agents, 1,4-dihydropyridines as calcium channel blockers, pyrimidines for anticancer and antimicrobial agents etc.

#### Research Guidance and Research Projects

**Number of of Awarded Doctoral Thesis under Supervision/ co-supervision: 5**

**Number of Doctoral Thesis under Supervision: 6**

**Research Projects: 4 completed (DST, UGC, Innovation project by DU and DRDO)**

#### Publications

##### Research Papers Published in Refereed/Peer Reviewed Journals

1. [2018] Design, Synthesis and Evaluation of 1*H*-1,2,3-Triazol-4-yl-methyl Tethered 3-Pyrrolylisatins as Potent Anti-Breast Cancer Agents  
Ruchi Jain, Parveen Gahlyan, Sonam Dwivedi, Rituraj Konwar, Sudhir Kumar, Mamta Bhandari, Ritu Arora, Rita Kakkar, Rakesh Kumar, and Ashok K. Prasad. **ChemistrySelect**, 3, 5263-5268 (2018).

2. [2018] A highly sensitive pyridine-dicarbohydrazide based chemosensor for colorimetric recognition of  $\text{Cu}^{2+}$ ,  $\text{AMP}^{2-}$ ,  $\text{F}^-$  and  $\text{AcO}^-$  ions  
**Rakesh Kumar**, Harshita Jain, Parveen Gahlyan, Ankita Joshi and C. N. Ramachandran. **New Journal of Chemistry**, 42, 8567 – 8576 (2018).
3. [2018] Surfactant free one-pot synthesis of  $\text{CeO}_2$ ,  $\text{TiO}_2$  and  $\text{Ti@Ce}$  oxide nanoparticles for ultra fast removal of  $\text{Cr(VI)}$  from aqueous media.  
P. K. Mishra, R. Kumar and P. K. Rai, **Nanoscale**, 10, 7257-7269(2018).
4. [2018] Aero-gel assisted synthesis of anatase  $\text{TiO}_2$  nanoparticles for humidity sensing application  
E. Poonia,, P. K. Mishra, V. Kiran, J. Sangwan, R. Kumar, Pramod Kumar Rai , V. K. Tomer, **Dalton Transactions**, 10.1039/C8DT00106E .
5. [2018] “Design and synthesis of fluorescent symmetric *bis*-triazolylated-1,4-dihydropyridines as potent antibreast cancer agents”  
**Rakesh Kumar**, Parveen Gahlyan, Abhishek Verma, Ruchi Jain, Sharmistha Das, Rituraj Konwar, and Ashok K. Prasad, **Synthetic Communications**, 48, 778-785 (2018).
6. [2018] “ Surfactant-free one-pot synthesis of low density Cerium Oxide nanoparticles for adsorptive removal of Arsenic species”  
Prashant Kumar Mishra, Amit Saxena, Ashok Singh Rawat, Pradeep Kumar Dixit, **Rakesh Kumar** and Pramod Kumar Rai.  
**Environment Progress & Sustainable Energy**, Environmental Progress & Sustainable Energy 37(1) , 221-231(2018).
7. [2017] “Bis- triazolylated-1,4- dihydropyridine-highly selective hydrophilic fluorescent probe for detection of  $\text{Fe}^{3+}$ ”  
**Rakesh Kumar**, Parveen Gahlyan, Neha Yadav, Mamta Bhandari, Manu Dalela, Ashok K Prasad, **Dyes and Pigments**, 147, 420-428 (2017).
8. [2017] “Synthesis, pharmacological evaluation and molecular docking of pyranopyrazole linked 1,4 dihydropyridines as potent positive inotropes”  
**Rakesh Kumar**, Neha Yadav, Rodolfo Lavilla , Daniel Blasi, Jordi Quintana , José Manuel Brea María Isabel Loza, JordiMestres<sup>c</sup>, Mamta Bhandari, RituArora, Rita Kakkar and Ashok K. Prasad.  
**Molecular Diversity**, 21, 533-546 (2017).
9. [2016] “Phytoremediation of lead and zinc in polluted yamuna soil using *helianthus annus*- A new green technology”  
Rajni Gupta, Gaurav Chugh, **Rakesh Kumar**, Reena Saxena.  
**International Journal of Advance Research in Science and Engineering**, 5(7), 268-276(2016).
10. [2016] “Application of *Brassica Juncea* (Indian Mustard) for phytoremediation of lead and zinc in polluted Yamuna soil”  
Rajni Gupta, Gaurav Chugh, **Rakesh Kumar**, Reena Saxena

11. [2014] "Design and synthesis of 4-pyrazolyl-1,4-dihydropyridines and their antihypertensive activity"

**Rakesh Kumar**, Jyoti Arora, Neha Yadav and Ashok K Prasad

**International Journal of Advance Research in Science and Engineering, IJARSE**, 3(10),229-238 (2014).

12. [2014] "Synthesis and antimicrobial studies of pyrimidine pyrazole heterocycles"

**Rakesh Kumar**, Jyoti Arora, Sonam Ruhil, Neetu Phougat, Anil K. Chhillar, and Ashok K .Prasad  
**Advances in Chemistry**, Volume 2014, Article ID 329681, **12 pages (2014).**

13. [2014] "Antimicrobial activity of newly synthesized hydroxamic acid of pyrimidine-5-carboxylic acid and its complexes with Cu(II), Ni(II), Co(II) and Zn(II) metal ions"

Bhawani Shankar, Rashmi Tomar, **Rakesh Kumar**, Madhu Godhara and Vijay Kumar Sharma  
**Journal of Chemical and Pharmaceutical Research**, 6(5), 925-930 (2014).

14. [2014] "Synthesis, characterization and antimicrobial activity of novel hydroxamic acids of pyrimidine-5-carboxylic acid and their complexes"

Rashmi Tomar, Bhawani Shankar, **Rakesh Kumar**, Madhu Godhara, Vijay Kumar Sharma  
**International Journal of Innovative Technology and Exploring Engineering (IJITEE)**, 3(11),40-43 (2014).

15. [2013] "Synthesis and Antimicrobial activity of pyrimidine chalcone"

**Rakesh Kumar**, Jyoti Arora, Ashok K Prasad, Najmal Islam and Anita K Verma  
**Med. Chem. Research**, 22(11), 5624-5631(2013).

16. [2013]"Stereocontrolled oxidative additions upon 1,4-dihydropyridines: Synthesis of hexahydrofuro[2,3-*b*]pyridine and hexahydropyrano[2,3-*b*]pyridine derivatives"

**Rakesh Kumar**, Dhiraj Kumar and Ashok K. Prasad  
**Synthetic Communications**, 43, 520-536 (2013).

17. [2012] "Stereocontrolled oxidative additions upon 1,4-dihydropyridines: Synthesis of hexahydrofuro[2,3-*b*]pyridine derivatives"

**Rakesh Kumar**, Dhiraj Kumar and Ashok K. Prasad  
**Indian J. Chem.**, vol. 51B, 1123 (2012).

18. [2011] "*o*-Substituted N-oxy arylsulfonamides and sulfonamides in Michael reactions"

Vasco D. B. Bonifácio, **Rakesh Kumar**, Sundaresan Prabhakar, and Ana M. Lobo  
**ARKIVOC**, 266-276, (x), (2011).

19. [2011] "Stereocontrolled oxyselenation studies on 1, 4-dihydropyridines: synthesis of *trans*-2-hydroxy (or alkoxy)-3-phenylseleno-1,2,3,4-tetrahydropyridines".

**Rakesh Kumar**, Dhiraj Kumar and Ashok K. Prasad  
**Synthetic Communications**, 41, 2640–2648 (2011).

20. [2011] "Oxidative additions with 1,4-dihydropyridines: A one pot synthesis of 3,4,4a,8,8a-hexahydro-2*H*-pyrido[3,2-*b*][1,4]oxazine derivatives"

**Rakesh Kumar**, Sakshi Malik, Dhiraj Kumar and Ashok K. Prasad  
**Synthetic Communications**, 41, 2719–2726 (2011).

21. [2011] “Addition reactions upon 1,4-dihydropyridine ”

Anil Kumar Teotia, **Rakesh Kumar** and Ramesh Chandra  
**Heterocyclic Letters**, 1, 227-233 (2011).

22. [2009] “Synthesis and antimicrobial activity of 4-[5-chloro-3-methyl-1-phenyl-1*H*-pyrazol-4-yl]-dihydropyridines and 4-[5-chloro-3-methyl-1-phenyl-1*H*-pyrazol-4-yl]-3,4-dihydropyrimidin -2-ones”

**Rakesh Kumar**,\* Sakshi Malik and Ramesh Chandra  
**Indian J. Chem.**, vol. 48B, 718 (2009).

23. [2007] “Synthesis of novel 5-substituted-6-methyl-4-[5-chloro-3-methyl-1-phenyl-1*h*-pyrazol-4-yl]-3,4-dihydropyrimidin-2(1*H*)-ones”

**Rakesh Kumar**,\* Sakshi Malik and Ramesh Chandra  
**Organic Preparations and Procedures International**, vol. 39(1), 101 (2007).

24. [2007] “Synthesis of Diethyl-1,4-Dihydro-2,6-Dimethyl-4-[(6-chloro)Thiouracil-3,5-Pyridine Dicarboxylate as Calcium Antagonist

Anil Kumar Teotia, **Rakesh Kumar**, Ramesh Chandra  
**Int. J. Chem. Sci.**, 5(3), 997-1004 (2007).

25. [2000] “A Synthetic Entry to Ervatamine Alkaloids - Synthesis of (+/-)-6-Oxo-16-episilicine and (+/-)-6-Oxosilicine.”

M.-Lluisa Bennasar, Bernat Vidal, **Rakesh Kumar**, Angel Larzaro, Joan Bosch  
**Eur. J. Org. Chem.**, 23, 3919 – 3926 (2000).

26. [2000] “Introduction of Heteroatom-Based substituents on 1,4-Dihydropyridines by means of a Halogen-Mediated, Oxidative Protocol: Diamination, Sulfonylation, Sulfinylation, Bis-sulfonylation, and Halo-Phosphonylation process”.

Rodolfo Lavilla, **Rakesh Kumar**, Oscar Coll, Carme Masdeu, Alessandro Spada, Joan Bosch, Enric Espinosa, and Elies Molins.  
**Chemistry an European Journal**, 6(10), 1763-1772 (2000).

27. [1998] “Vicinal Diamination of 1,4-dihydropyridines”.

Rodolfo Lavilla, **Rakesh Kumar**, Oscar Coll, Carme Masdeu and Joan Bosch  
**Chem. Commun.**, 2715-2716 (1998).

28. [1998] “Electrophilic oxidative additions upon 1,4-Dihydropyridines”.

Rodolfo Lavilla, Oscar Coll, **Rakesh Kumar** and Joan Bosch  
**Journal of organic chemistry**, 63, 2728 (1998).

29. [1996] "A short route for the construction of the tetracyclic ring system of silicine- methuenine alkaloids".

M.-Lluisa Bennasar, Bernat Vidal, Angel Lazaro, **Rakesh Kumar** and Joan Bosch  
**Tetrahedron letters.**, 37(20), 3541 (1996).

30. [1996] "A novel one pot facile synthesis of 1,3-diaryl-6-ethoxycarbonyl-1,2,3,4-tetrahydro-4,7-dioxo-2-thioxo-7*H*-pyrano(2,3-*d*)pyrimidines".  
V. K. Ahluwalia, Suman Dudeja, Ranjana Sahay and **Rakesh Kumar**  
**Indian J. Chem.**, 35B(12), 1319 (1996).
31. [1996] "A facile entry to fused pyrimidines: Preparation of pyrido (2,3-*d* : 6,5-*d'*) dipyrimidine derivatives"  
V. K. Ahluwalia, Umashankar Das and **Rakesh Kumar**  
**Indian J. Chem.**, 35B(8), 852 (1996).
32. [1996] "A facile entry to pyrimidine derivatives: synthesis of 5-(1,3-dithiolane/dithian-2-ylidene) and pyrano(2,3-*d*)pyrimidines"  
V. K. Ahluwalia, Umashankar Das and **Rakesh Kumar**  
**Indian J. Chem.**, 35B(7), 673 (1996).
33. [1996] "Synthesis of 1,3-diaryl-1,2,3,4-tetrahydro-7-methyl-4,5-dioxo-2-thioxo-5*H*-pyrano(2,3-*d*)pyrimidines"  
V. K. Ahluwalia, Ranjana Sahay and **Rakesh Kumar**  
**Indian J. Chem.**, 35B(3), 248 (1996).
34. [1994] "Synthesis of some new 1,3-diaryl-5-(2,3-dihydrobenzothiazol-2-ylidene)-2-thiobarbituric acids"  
V. K. Ahluwalia, Renu Aggarwal and **Rakesh Kumar**  
**Indian J. Chem.**, 33B, 1089 (1994).
35. [1994] "A convenient one pot synthesis of 1,3-dimethyl-2,4-dioxo-1,2,3,4-tetrahydro-10*H*-pyrimido(5,4-*b*)(1,4)benzothiazines"  
V. K. Ahluwalia, Renu Aggarwal and **Rakesh Kumar**  
**Indian J. Chem.**, 33B, 65 (1994).
36. [1993] "A convenient one pot synthesis of 5-aryl-7-methyl-1,2,3,4-tetrahydro-2,4-dioxo-5*H*-pyrano(2,3-*d*)pyrimidines"  
V. K. Ahluwalia, Renu Aggarwal and **Rakesh Kumar**  
**Indian J. Chem.**, 32b, 963 (1993).
37. [1992] "A convenient synthesis of some new pyrano (2,3-*d*) pyrimidines"  
V. K. Ahluwalia, **Rakesh Kumar** and Renu Aggarwal  
**Org. Prep. Pro. Int.**, 2496, 675 (1992).
38. [1991] "A convenient synthesis of 1,3-diaryl-6,7-dihydroxybenzofuro(2,3-*d*)pyrimidines"  
V. K. Ahluwalia, **Rakesh Kumar** and C. H. Khanduri  
**Indian J. Chem.**, 30B, 80 (1991).
39. [1990] "Synthesis of 1,3-diaryl-7,7-diethyl-5-methyl-4-oxo-2-thioxo-1,2,3,4-tetrahydro-7*H*-pyrano(2,3-*d*)pyrimidines"  
V. K. Ahluwalia, Rita Bhatla, Anju Khurana and **Rakesh Kumar**  
**Indian J. Chem.**, 29B, 1141(1990).
40. [1990] "A convenient one pot synthesis of 1,3,5-triaryl-1,2,3,4-tetrahydro-4-oxo-7-

methyl-2-thioxo-5*H*-pyrano(2,3-*d*)pyrimidines"

V. K. Ahluwalia, **Rakesh Kumar**, A. Alauddin, C. H. Khanduri and N. Mallika  
**Synthetic Communications**, 20(9), 1265 (1990).

41. [1990]"A convenient synthesis of 1,3-diaryl-1,2,3,4-tetrahydro-5,7,7-trimethyl-4-oxo- 2-thioxo-7*H*-pyrano(2,3-*d*)pyrimidines"

V. K. Ahluwalia, **Rakesh Kumar**, Anju Khurana and Rita Bhatala  
**Tetrahedron**, 46(11), 3953 (1990).

42. [1989] "Mechanism of debromination in hetero cyclization using  $\alpha,\alpha$ -dibromocarbonyl compounds as synthons"

V. K. Ahluwalia, Bhupinder Mehta and **Rakesh Kumar**  
**Synthetic Communications**, 19(3&4), 619 (1989).

43. [1988] "Solid state reactivity of organic compounds with inorganic compounds-II"

P. S. Bassi, G. S. Chopra and **R. Prasher**  
**J. of Thermal Analysis**, 34,723 (1988).

### **Review Articles**

44. [2001] "Stereocontrolled Additions Upon Dihydropyridines and Tetrahydropyridines: Access to N-Heterocyclic compounds Related to Natural Products".

**Rakesh Kumar** and R. Chandra.  
**Advances in Heterocyclic Chemistry**, vol. 78, chapter 4, (2001).

### **Books**

1. [2009] **REACTION MECHANISMS IN ORGANIC SYNTHESIS**

Wiley, Oxford, England.

2. [2014] **CHEMISTRY OF HETEROCYCLIC CHEMISTRY**

ANE Publisher, New Delhi and CRC Press USA.

3. [2012] Fourth Edition, [2007] Third Edition, [2005] Second Edition, [2002] First Edition **ORGANIC REACTION MECHANISMS**

NAROSA Publisher, New Delhi, CRC Press, USA and Alpha Science, UK.

4. [2011] **TEXT BOOK IN ORGANIC CHEMISTRY**

VIVA Publisher, New Delhi.

5. [2010] **HETEROCYCLIC CHEMISTRY**

ANE Publisher, New Delhi.

6. [2008] **REACTION MECHANISM THROUGH SOLVED PROBLEMS**

VISHAL Publisher, Jalandhar.

7. **[2006] STUDY NOTES IN ORGANIC CHEMISTRY**

VIVA Publisher, New Delhi

8. **[1997] DICTIONARY OF BIOCHEMISTRY**

CBS Publisher, New Delhi

### Conference / Symposia / Workshop (National and International)

#### Co-Chair and Invited Lectures

1. **[2017]** Innovations in Chemistry Laboratory Teaching” Department of Chemistry, **Zakir Husain Delhi College**, University of Delhi (8<sup>th</sup> Feb, 2017).
2. **[2016]** 4<sup>th</sup> International Conference on Asian Network for Natural and Unnatural Materials (ANNUM IV), **NUS, Singapore**.
3. **[2016]** IUPAC sponsored 3<sup>rd</sup> International Conference on Agrochemicals protecting Crops and Natural Environment: New Chemistries for phytomedicines and crop protecting Chemicals, **IARI, New Delhi**.
4. **[2014]** 20<sup>th</sup> ISCBC, **University of Delhi**.
5. **[2012]** IUPAC sponsored 2<sup>nd</sup> International Conference on Agrochemicals protecting Crops-Role of Chemistry for sustainable agriculture, **IARI, New Delhi**.
6. **[2012]** 2<sup>nd</sup> National Conference in Chemistry application (Chemapp 2012), SSGM College, Kopargaon, **Ahmednagar**.
7. **[2002]** National Conference on Emerging areas in Biomedical Sciences, Bundelkhand University, **Jhansi**.

#### Oral Presentations/ Poster Presentations

1. **[2014]** 51<sup>st</sup> ACC, Kurukshetra University.
2. **[2014]** ICOS-20, **Budapest, Hungary**.
3. **[2014]** CARBOXXVII, **Dehradun**.
4. **[2013]** 15<sup>th</sup> Asian Chemical Congress, **Singapore**.
5. **[2013]** 50<sup>th</sup> ACC, **Punjab University, Chandigarh**.
6. **[2013]** 19<sup>th</sup> ISCB International Conference, **MS University, Udaipur**.
7. **[2011]** 2<sup>nd</sup> International Conference on Organic Chemistry: Advances in Heterocyclic Chemistry, **Tbilisi, Georgia**.
8. **[2010]** 18<sup>th</sup> International Conference on Organic Synthesis, **Bergen, Norway**.
9. **[2010]** T3D-2010 International Symposium on Trends in Drug Discovery and Development, Department of



Chemistry, University of Delhi.

10. [2010] Recent Advances in Analytical Sciences, **HP University, Shimla.**
11. [2007] 21<sup>st</sup> International Congress on Heterocyclic Chemistry, **UNSW, Sydney, Australia.**
12. [2007] 9<sup>th</sup> National symposium In Chemistry, **University of Delhi.**
13. [2002] IUPAC / ICOS-14, **Christchurch, New Zealand.**
14. [2001] **IUPAC International Symposium on Green Chemistry**, University of Delhi.
15. [2000] **International Symposium on Trends in Medicinal Chemistry and Biocatalysis**, University of Delhi.
16. [2000] **Indo-Russian Seminar on Trends in Chemical Sciences**, University of Delhi.
17. [1997] **34<sup>th</sup> Annual Convention of Chemists**, University of Delhi.
18. [1994] **International Symposium on Bio-Organic Chemistry**, University of Delhi.

#### Organized Conferences/Seminars

1. [2016] **Joint Secretariat** of Organizing Committee for Carbo-XXXI International Conference on “New Frontiers in Carbohydrate Chemistry and Biology” held from 14<sup>th</sup> to 16<sup>th</sup> November in University of Delhi.
2. Member, Organizing Committee, International conference organized by Department of Chemistry, University of Delhi, India 20<sup>th</sup> ISCBC [2014].
3. [2011] **Join Secretary**, National Workshop on Role of Analytical Techniques in chemical and biological and Environmental sciences, Kirori Mal College.
4. [2010] **Secretary**, National Workshop on Role of Analytical Techniques in Industry, Kirori Mal College.
5. [2005] **Convener**, seminar on Frontier Technologies in Chemical, Biological and Horticultural Sciences, Convention center, University of Delhi.

#### Attended Conferences/Seminars/Workshops

1. [2016] **ICMTech 2016**, Delhi University from March 1-4, 2016.
2. [2013] **7<sup>th</sup> Indo-Italian workshop on Chemistry of Biology & antioxidants** at Department of Chemistry, University of Delhi on **16<sup>th</sup> November 2013.**
3. [2013] **“Emerging Trends in Development of Drugs and Devices”** jointly organized by the Department of Chemistry, University of Delhi and three National Science Academics of India, during **January 21st-23rd, 2013.**
4. [2013] Indo-German work shop entitled “New Perspectives for Nano-Carriers in Biomedical Applications” organized by the Department of chemistry, University of Delhi on 14<sup>th</sup> Jan 2013.
5. [2010] **4<sup>th</sup> Indo- Italian seminar** on Green chemistry & Natural products at Department of Chemistry, University of Delhi on 17<sup>th</sup> November 2010.
6. [2010] **workshop on Chemistry lab safety awareness** on 31<sup>st</sup> August 2010 at ILLL, University of Delhi.
7. [2009] **Workshop** in Partners in Learning by Microsoft and ILLL, University of Delhi from **14-8-2009 to 25-9-2009.**

8. [2009] **13<sup>th</sup> ISCB** international conference held in University of Delhi, from 26-02-2009 to 1-3-2009.
9. [2007] **Conference** on Green Chemistry held in November 2007 in Delhi.
10. [2004] **ICOB-4 and ISCNP-24 IUPAC** International conference on "**Biodiversity and Natural Products: Chemistry and Medicinal Applications**": held from 26-01-2004 to 31-01-2004 in New Delhi.
11. [2003] National Symposium in **Biotechnology: Expanding Horizons**, held from 17-10-2003 to 18-10-2003 in INSA (organized by Acharya Narendra Dev College).
12. Workshop on "**Fabrication and Evaluation of Digital Thermometer and Thermostat**", Organized by CSEC, University of Delhi.
13. [1999] Paper accepted in "**17<sup>th</sup> International Congress on Heterocyclic Chemistry**", held from 01-08-1999 to 06-08-1999 in **Vienna, Austria**.
14. [1998] "**Hyphenated Techniques for Chemical Analysis**" conducted on 25<sup>th</sup> April 1998, University of Delhi.
15. [1990] "**17<sup>th</sup> International Symposium on Chemistry of Natural Products**", held from 04-02-1990 to 09-02-1990 in New Delhi.

#### Refresher/Orientation Courses

##### Attended

[1991] Orientation Course (OR-10), CPDHE, University of Delhi.

[1993] Refresher Course in Chemistry (CH-33), CPDHE, University of Delhi.

[1999] Refresher Course in Chemistry (CH-86), CPDHE, University of Delhi.

[1996] Synthesis of Natural Products, University of Barcelona.

##### Organized

[2013] **Convener**, CPDHE Refresher Course 2013, Department of Chemistry, University of Delhi.

[1998] **Course co-ordinator**, CPDHE Refresher Course in Chemistry (CH-86), CPDHE, University of Delhi.

Signature of Faculty Member