



## Faculty Details proforma

Title	Associate Professor	First Name	Rakesh	Last Name	Kumar	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/departement_facultymembers.html?department_id=Chemistry">http://www.du.ac.in/departement_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>						
<p>1990-1991: Lecturer (Temp.), Kirori Mal College, University of Delhi. 1991-1995: Lecturer, Kirori Mal College, University of Delhi. 1995-1999: Senior Lecturer, Kirori Mal College, University of Delhi. 1999-2015: Reader/Associate Professor, Kirori Mal College, University of Delhi. 2015-Till date: Associate Professor, Department of Chemistry, University of Delhi.</p> <p><b>Post-Doc:</b> 1996-1997: Post-doctoral Fellow, University of Barcelona, Spain.</p>						
<b>Administrative Assignments</b>						
<ul style="list-style-type: none"><li>• [2014-2017] Deputy Dean, Student's Welfare University of Delhi.</li></ul> <p><b>In Kirori Mal College, University of Delhi</b></p> <ul style="list-style-type: none"><li>• [2011-2013] Foreign Students Advisor.</li><li>• [2009-2011] College Student Union Advisor.</li><li>• [2009-2010] Teacher-in-Charge.</li><li>• [2005-2009] Convenor College Portal Committee.</li><li>• [2003-2005] Convenor Chemistry Department Seminar Committee.</li><li>• [2011-2014] Member College Student Union Committee.</li><li>• [2008-2014] Member College Central Computer Committee.</li><li>• [2003-2014] Member College Portal Committee.</li></ul>						

<b>Area of Specialization</b>
Synthetic Organic Chemistry/Medicinal Chemistry
<b>Classes Taught</b>
<p><b>B.Sc.</b> course at Kirori Mal College.  <b>M.Sc.</b> course at Department of Chemistry, University of Delhi.  <b>M. Tech.</b> (Chemical Synthesis and Process Technologies) course at Department of Chemistry, University of Delhi.</p>
<b>Research Guidance</b>
<p><b>Supervision/ co-supervision of Awarded Doctoral Thesis</b>  Total No. 5  <b>Supervision of Doctoral Thesis, under progress</b>  Total No. 6</p>
<b>Publications Profile</b>
<p><b>Research Papers Published in Refereed/Peer Reviewed Journals</b></p> <ol style="list-style-type: none"> <li> <p>[2017] “Synthesis, pharmacological evaluation and molecular docking of pyranopyrazole linked 1,4-dihydropyridines as potent positive inotropes”</p> <p><b>Rakesh Kumar</b>, 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</p> <p><b>Molecular Diversity</b>, DOI- 10.1007/s11030-017-9738-7</p> </li> <li> <p>[2017] “ Surfactant-free one-pot synthesis of low density Cerium Oxide nanoparticles for adsorptive removal of Arsenic species”</p> <p>Prashant Kumar Mishra, Amit Saxena, Ashok Singh Rawat, Pradeep Kumar Dixit, <b>Rakesh Kumar</b> and Pramod Kumar Rai.</p> <p>Environment Progress &amp; Sustainable Energy, <b>In press</b></p> </li> <li> <p>[2016] “Phytoremediation of lead and zinc in polluted yamuna soil using <i>helianthus annus</i>- A new green technology”</p> <p>Rajni Gupta, Gaurav Chugh, <b>Rakesh Kumar</b>, Reena Saxena.</p> <p><b>International Journal of Advance Research in Science and Engineering</b></p> </li> <li> <p>[2016] “Application of <i>brassica juncea</i> (Indian Mustard) for phytoremediation of lead and zinc in polluted Yamuna soil”</p> <p>Rajni Gupta, Gaurav Chugh, <b>Rakesh Kumar</b>, Reena Saxena</p> <p><b>International Journal of Natural and Applied Sciences</b></p> </li> <li> <p>[2014] “Design and synthesis of 4-pyrazolyl-1,4-dihydropyridines and their antihypertensive activity”</p> </li> </ol>

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

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

6. [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
7. [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).
8. [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).
9. [2013] "Synthesis and biological evaluation of pyrimidine analogues of triazole linked chalcone"  
**Rakesh Kumar**, Jyoti Arora, Ashok K Prasad, Najmal Islam and Anita K Verma  
**Med. Chem. Research**, 22(11), 5624-5631(2013).
10. [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).
11. [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).
12. [2011] "O-Substituted N-oxy arylsulfonamides and sulfonamides in Michael reactions"  
Vasco D. B. Bonifácio, **Rakesh P. Kumar**, Sundaresan Prabhakar, and Ana M. Lobo  
**ARKIVOC**, 266-276, (x), (2011).
13. [2011] "Stereocontrolled oxyselelenation 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).
14. [2011] "A one pot synthesis of 3,4,4a,8,8a-hexahydro-2*H*-pyrido[3,2-*b*][1,4]oxazine derivatives"  
**Rakesh Kumar**, Shakshi Malik, Dhiraj Kumar and Ashok K. Prasad  
**Synthetic Communications**, 41, 2719-2726 (2011).
15. [2011] "Addition reactions upon 1,4-dihydropyridine"  
Anil Kumar Teotia, **Rakesh Kumar** and Ramesh Chandra  
**Heterocyclic Letters**, 1, 227-233 (2011).
16. [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).

17. [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).

18. [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).

19. [2000] "A Synthetic Entry to Ervatamine Alkaloids - Synthesis of (+/-)-6-Oxo--16-episilicine and (+/-)-6-Oxosilicine."

M.-Lluïsa Bennasar, Bernat Vidal, **Rakesh Kumar**, Angel Larzaro, Joan Bosch

**Eur. J. Org. Chem.**, 23, 3919 – 3926 (2000).

20. [2000] "Introduction of Heteroatom-Based Substituents on 1,4-Dihydropyridines through a Non-Biomimetic, Halogen-Mediated, Oxidative Protocol. Diamination, Sulfonylation, Sulfonylation, Disulfanylation, 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).

21. [1998] "Vicinal Diamination of 1,4-dihydropyridines".

Rodolfo Lavilla, **Rakesh Kumar**, Oscar Coll, Carme Masdeu and Joan Bosch

**Chem. Commun.**, 2715-2716 (1998).

22. [1998] "Electrophilic oxidative additions upon 1,4-Dihydropyridines".

Rodolfo Lavilla, Oscar Coll, **Rakesh Kumar** and Joan Bosch

**Journal of organic chemistry**, 63, 2728 (1998).

23. [1996] "A short route for the construction of the tetracyclic ring system of silicine- methuenine alkaloids".

M.-Lluïsa Bennasar, Bernat Vidal, Angel Lazaro, **Rakesh Kumar** and Joan Bosch

**Tetrahedron letters.**, 37(20), 3541 (1996).

24. [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).

25. [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).

26. [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).

27. [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).

28. [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).

29. [1994] "A convenient one pot synthesis of 2,3-dimethyl-2,4-dioxo-1,2,3,4-tetrahydro-10H-pyrimido(5,4-b)(1,4)benothiazines"

V. K. Ahluwalia, Renu Aggarwal and **Rakesh Kumar**  
**Indian J. Chem.**, 33B, 65 (1994).

30. [1993]"A convenient one pot synthesis of 5-aryl-7-methyl-1,2,3,4-tetrahydro-2,4-dioxo- 5H-pyrano(2,3-d)pyrimidines"

V. K. Ahluwalia, Renu Aggarwal and **Rakesh Kumar**  
**Indian J. Chem.**, 32b, 963 (1993).

31. [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).

32. [1991] "Synthesis of 1,3-diaryl-6,7-dihydrobenzofuro(2,3-d)pyrimidines"

V. K. Ahluwalia, **Rakesh Kumar** and C. H. Khanduri  
**Indian J. Chem.**, 30B, 80 (1991).

33. [1990] "Synthesis of 1,3-diaryl-1,2,3,4-tetrahydro-7,7-diethyl-5-methyl-4-oxo-2-thioxo- 7H-pyrano(2,3-d)pyrimidines"

V. K. Ahluwalia, Rita Bhatala, Anju Khurana and **Rakesh Kumar**  
**Indian J. Chem.**, 29B, 1141(1990).

34. [1990] "A convenient one pot synthesis of 1,3,5-trialkyl-1,2,3,4-tetrahydro-4-oxo-7-methyl-2-thioxo-5H-pyrano(2,3-d)pyrimidines"

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

35. [1990]"A convenient synthesis of 1,3-diaryl-1,2,3,4-tetrahydro-5,6,7-trimethyl-4-oxo- 2-thioxo-7H-pyrano(2,3-d)pyrimidines"

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

36. [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).

37. [1988]"Solid state reactivity of organic compounds with inorganic compounds"

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

#### **Review Articles**

38. [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**

##### **A. Postgraduate Level**

1. [2009] REACTION MECHANISMS IN ORGANIC SYNTHESIS

**Wiley, Oxford, England.**

##### **B. Undergraduate and Postgraduate Level**

2. [2014] CHEMISTRY OF HETEROCYCLIC CHEMISTRY

ANE Publisher, New Delhi and **CRC Press USA.**

3. [2002, Forth Edition 2012] 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 Organising 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. [2011] **Join Secretary**, National Workshop on Role of Analytical Techniques in chemical and biological and Environmental sciences, Kirori Mal College.
3. [2010] **Secretary**, National Workshop on Role of Analytical Techniques in Industry, Kirori Mal College.
4. [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 ILL, University of Delhi.
7. [2009] **Workshop** in Partners in Learning by Microsoft and ILL, 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 26-010-2004 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.

## Fellowships and Awards

1. [2003] Post-Doc. Fellowship, University of New Lisbon, Portugal.
2. [1996-1997] Post-Doc. Fellowship, University of Barcelona, Spain.
3. [1988-1990] Senior Research Fellowship (SRF) by CSIR, NET.
4. [1986-1988] Junior Research Fellowship (JRF) by CSIR, NET.

## Association With Professional Bodies

### *Memberships (Life)*

1. Indian Science Congress Association (L12996).
2. Indian Society of Analytical Scientists, Delhi Chapter.
3. Indian Society of Chemists and Biologists (LF591/2011).
4. Association of Carbohydrate Chemists and Technologists India (LM/237/2014).

## Other Activities

Member, Organizing Committee, International conference organized by Department of Chemistry, University of Delhi, India 20<sup>th</sup> ISCBC [2014].

## 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.