




University Faculty Details Page on DU Web-site

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|---|--|--|-------------------|-----------|---------------------------|---|
| Title | Professor | First Name | Ashok Kumar | Last Name | Prasad |  |
| Designation | Professor | | | | | |
| Department | Department of Chemistry | | | | | |
| Address | (Campus) | North Campus, University of Delhi, Delhi - 110 007 | | | | |
| | (Residence) | 38/2, Probyn Road, Delhi University, Delhi - 110 007 | | | | |
| Phone No | (Campus) | 91-011-2766 2486 | | | | |
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| Web-Page | | | | | | |
| Education | | | | | | |
| Subject | Institution | | Year | | Details | |
| Ph.D. | University of Delhi | | 1990 | | Subject: Chemistry | |
| M.Phil. | University of Delhi | | 1987 | | Subject: Chemistry | |
| M.Sc. | University of Bihar | | 1985 | | Subject: Chemistry | |
| B.Sc. | University of Bihar | | 1983 | | Subject: Chemistry (Hons) | |
| Career Profile | | | | | | |
| Organization / Institution | Designation | | Duration | | Role | |
| University of Delhi | Professor | | June 2009- todate | | Teaching & Research | |
| University of Delhi | Associate Professor | | 2001-2009 | | Teaching & Research | |
| University of Southern Denmark, Denmark | Visiting Associate Professor | | 2008-2009 | | Honorary Position | |
| Japan Advance Institute of Science Technology | Visiting Professor | | 2015-16 | | Honorary Position | |
| University of Delhi | Scientist 'B' | | 1996-2001 | | Research | |
| University of Southern Denmark, Denmark | DANIDA (Denmark) Fellow | | 1992-1996 | | Research | |
| Department of Chemistry, University of Delhi | Senior Research Associate | | 1991-1992 | | Research | |
| Ranbaxy Research Laboratories, Delhi | Research Associate | | 1990-1991 | | Research | |
| Research Interests / Specialization | | | | | | |
| <p><i>Nucleic Acid Chemistry</i>: Novel Synthesis of modified nucleosides of biological importance; <i>Biocatalysis and Biotransformations</i>: Green Synthetic Methodology Development; <i>Chemistry of Natural Products</i>: Isolation of Bioactive compounds; and Synthesis of Bioactive Heterocyclic Compound. <i>Synthesis of Amphiphilic Polymers for Drug Delivery Applications</i>.</p> | | | | | | |
| Teaching Experience (Subjects/Courses Taught) | | | | | | |
| 16 Years teaching experience: Organic Chemistry, Bioorganic Chemistry, Photochemistry and Pericyclic Reaction, Organic Reaction Mechanism. | | | | | | |
| Honors & Awards | | | | | | |
| <ul style="list-style-type: none"> • Visiting Professor at Japan Advance Institute of Science Technology, Nomi Ishikawa, Japan (2015-17) • Excellence in Carbohydrate Research- 2015 by Association of Carbohydrate Chemists & Technologists (India) • ISCB Award for Excellence in Chemical Sciences- 2014 • Honorary Diploma for Scientific Achievements and International Scientific Collaboration by Russian International Charitable Foundation "Scientific Partnership", Moscow, Russia (March 2013) • Honorary Visiting Ass. Professor, Department of Physics and Chemistry, University of Southern Denmark, Denmark • INBRE Lecture (June 2008) • DANIDA (Denmark) Fellow: 1992-1996 • The CRSI Young Scientist Award- 2007 • Senior Research Fellow (1989): CSIR, New Delhi | | | | | | |

- Junior Research Fellow (1986): CSIR, New Delhi
- Junior Research Fellow (1986): UGC-NET, New Delhi
- National Merit scholarship: Government of India, Sessions 1982-83 and 1983-84 during MSc

Publications

Books / Monographs

| <u>S. No.</u> | <u>Year of Publication</u> | <u>Title</u> | <u>Book</u> | <u>Co-Author</u> |
|---------------|----------------------------|--|---|---|
| 1. | 2005 | Biocatalytic Protecting Group Chemistry on Sugars, Nucleosides and their Analogs | Biocatalysis: Chemistry and Biology | Gaurav Shakya |
| 2. | 2017 | Facile Access to Bromonucleosides Using Sodium Monobromoisocyanurate (SMBI) | Current protocols in nucleic acid chemistry, 68, 1391-1399. | Jyotirmoy Maity, Smriti Srivastava, YS Sanghvi, Roger Stromberg |

In Indexed/ Peer Reviewed Journals

| <u>S. No.</u> | <u>Year of Publication</u> | <u>Title</u> | <u>Journal</u> |
|---------------|----------------------------|---|---|
| 1. | 2013 | Ethyl-3',4',5'-trimethoxythionocinnamate modulates NF- κ B and Nrf2 transcription factors | <i>Eur. J. of Pharm.</i> 700, 32-41. |
| 2. | 2013 | Stereocontrolled oxidative additions upon 1,4-dihydropyridines: Synthesis of hexahydrofuro[2,3-b]pyridine and hexahydropyrano[2,3-b]pyridine derivatives. | <i>Synth. Comm.</i> 43, 520-536. |
| 3. | 2013 | A novel cinnamate derivative attenuates asthma features and reduces bronchial epithelial injury in mouse model | <i>International Immunopharmacology</i> 15, 150-159. |
| 4. | 2013 | Sugar-Modified Mercaptoacetamido-linked Nonionic Nucleoside Dimer. | <i>Trends in Carbohydrate Research</i> 5, 35-42. |
| 5. | 2013 | Economical route for oxidative cleavage of double bond to synthesize taxol side chain | <i>Indian Journal of Chemistry - Section B Organic and Medicinal Chemistry</i> 52, 379-86 |
| 6. | 2013 | Design and synthesis of LNA-based mercaptoacetamido-linked nucleoside dimers. | <i>Nucleosides, Nucleotides and Nucleic Acids</i> 32, 256-72. |
| 7. | 2013 | Synthesis and antimicrobial activity of pyrimidine chalcones | <i>Med. Chem. Res.</i> 22(11), 5624-31. |
| 8. | 2013 | Sugar-modified mercaptoacetamido-linked nonionic nucleoside dimer | <i>Trends in Carbohydrate Research</i> 5 (2), 35-42 |
| 9. | 2013 | Modified oligonucleotides: Strides towards antisense drugs | <i>Trends in Carbohydrate Research</i> 5 (3), 1-7. |
| 10. | 2014 | Effect of acyl chain length on selective biocatalytic deacylation on O-aryl glycosides and separation of anomers | <i>Bioorg. Chem.</i> 53, 83-91 |
| 11. | 2014 | Nucleic acid therapeutics: Basic concepts and recent developments | <i>RSC Adv.</i> 4 (32), 16618-16631 |

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| 12. | 2014 | Synthesis and evaluation of 2,2-dimethylchroman derivatives as inhibitors of ICAM-1 expression on human endothelial cells | <i>J. Het. Chem. Article in Press</i> |
| 13. | 2014 | Synthesis of triazole linked LNA-based nonionic nucleoside dimers using click reaction | <i>Curr. Org. Synth.</i> 11, 1-10. |
| 14. | 2014 | Synthesis of potential bioactive novel 7-[2-hydroxy-3-(1,2,3-triazol-1-yl)propyloxy]-3-alkyl-4-methylcoumarins | <i>J. Het. Chem.</i> 2015 , 52, 1-14. |
| 15. | 2014 | Cu(I)-catalyzed efficient synthesis of 2'-triazolo-nucleoside conjugates | <i>J. Het. Chem.</i> 2015 , 52, 701-710. |
| 16. | 2014 | Chemoenzymatic convergent synthesis of 2'-o,4'-c-methyleneribonucleosides | <i>J. Org. Chem.</i> 79 (13), 6336-6341 |
| 17. | 2015 | Design and Synthesis of Triazole-Linked <i>xylo</i> -Nucleoside Dimers | <i>Nucleosides, Nucleotides and Nucleic Acids</i> 34, 388-399. |
| 18. | 2015 | Synthesis of potential bioactive novel 7-[2-hydroxy-3-(1,2,3-triazol-1-yl)propyloxy]-3-alkyl-4-methylcoumarins. | <i>J. Heterocyclic Chem.</i> 52, 1-14. |
| 19. | 2015 | Mild and Efficient Palladium / BrettPhos-catalyzed Methoxylation and deuteriomethoxylation of Activated Aryl Bromides. | <i>Tetrahedron Letts.</i> 56, 2234-2237. |
| 20. | 2015 | Satrustructure-activity Relationship Studies of 4-Methylcoumarin Derivatives as Anticancer Agents | <i>Pharma. Biol.</i> 2015 , DOI: 10.3109/13880209.2015.1016183. |
| 21. | 2015 | Self-assembly, Photoresponsive Behaviour and Transport Potential of Azobenzene Grafted Dendronized Polymeric Amphiphiles | <i>RSC Adv.</i> 5, 48301-48310 |
| 22. | 2015 | Highly Selective Biocatalytic Transesterification Reactions on Aryl 3-hydroxy-2-(hydroxymethyl)-2-methylpropanoates | <i>Catalysis Letters</i> 145, 919. |
| 23. | 2015 | Facile Access to 5'-S-(4,4'-Dimethoxytrityl)-2',5'-dideoxyribonucleosides via Stable Disulfide Intermediates | <i>Current Protocols in Nucleic Acid Chemistry</i> DOI: 10.1002/0471142700.nc0134s62. |
| 24. | 2015 | Anti-inflammatory and Antioxidant Properties of Piper Species: A Perspective from Screening to Molecular Mechanisms | <i>Current Topics Med. Chem.</i> 2015 , 15, 886-893. |
| 25. | 2015 | Inhibition of Alzheimer's BACE-1 by 2,6-Dialkyl-4-chromon-3-yl-1,4-dihydropyridin-3,5-dicarboxylates. | <i>Med. Chem. Res.</i> 2015 , 24, 3230-3241. |
| 26. | 2015 | Nucleic Acid Based Therapeutics: Harnessing the Specificity | <i>Research Journal of Contemporary Concerns.</i> 9(B), 3-8. |
| 27. | 2015 | Facile Access to 5'-S-(4,4'-Dimethoxytrityl)-2',5'-Dideoxyribo-nucleosides via Stable Disulfide Intermediates | <i>Current protocols in Nucleic Acid Chemistry</i> , 2015 , 62, 1-9. |

28. 2015 Synthesis of potential bioactive novel 7-[2-hydroxy-3-(1,2,3-triazol-1-yl)propyloxy]-3-alkyl-4-methylcoumarins *J. Het. Chem.* **2015**, 52, 1-14.
29. 2015 Design and Synthesis of Triazole-Linked *xylo*-Nucleoside Dimers *Nucleosides, Nucleotides and Nucleic Acids* **2015**, 34, 388-399.
30. 2015 Cu(I)-Catalyzed Efficient Synthesis of 2'-Triazolo-nucleoside Conjugates *J. Het. Chem* **2015**, 52, 701-710.
31. 2015 Biocatalytic route to C-3'-azido/-hydroxy-C-4'-spiro-oxetanoribo-nucleosides Biocatalytic route to C-3'-azido/-hydroxy-C-4'-spiro-oxetanoribo-nucleosides *Carbohydrate Research* **2015**, 417, 19-26.
32. 2015 Gapmer Oligonucleotides: Sugar-modified Wings to Antisense Therapeutics *Trends Carbo. Res.* **2015**, 7, 28-43.
33. 2015 A general, mild and efficient palladium-catalyzed 2,2,2-trifluoroethoxylation of activated aryl bromides and bromo-chalcones: bromo-chalcones a new coupling partner in cross-coupling reaction *Tetrahedron* **2015**, 71, 8307-8314.
34. 2015 Synthesis of β -C-Glycopyranosyl Aldehydes and 2,6-Anhydro-heptitols *J. Org. Chem.* **2015**, 80, 11169-11174.
35. 2016 Structure-activity relationship studies of 4-methylcoumarin derivatives as anticancer agents *Pharmaceutical Biology*, **2016**, 54, 105-110.
36. 2016 Triphenyl Phosphite-mediated "Green" Synthesis of Novel Carboxycoumarin Amides. *Current Green Chemistry*, 3(4), 366-373.
37. 2016 Biocatalytic synthesis of novel partial esters of a bioactive dihydroxy 4-methylcoumarin by *Rhizopus oryzae* lipase (ROL). *Molecules*, 21(11), 1499/1-1499/11.
38. 2016 Synthesis of macromolecular systems via lipase catalyzed biocatalytic reactions: applications and future perspectives. *Chem. Soc. Rev.*, 45, 6855-6887.
39. 2016 Chemo-enzymatic synthesis of 3'-O,4'-C-methylene-linked α -L-arabinonucleosides. *RSC Advances*, 6, 82432-82438.
40. 2016 Coumarin Derivatives as Adjuvants: From In Silico Physicochemical Characterization to In vitro Evaluation against Gram Positive Bacteria. *Comb. Chem. High Throughput Screen*, 19, 489-496.
41. 2016 Hyperbranched glycerol-based core-amphiphilic branched shell nanotransporters for dermal drug delivery. *Polymer*, 96, 156-166.
42. 2016 Synthesis and anti-inflammatory activity evaluation of novel triazolyl-isatin hybrids. *J. Enzyme Inhib. Med. Chem*, 31, 1520-1526.
43. 2016 Mitigation of radiation-induced hematopoietic injury by the polyphenolic acetate 7, 8-diacetoxy-4-methylthiocoumarin in mice. *Science Reports*, 6, 37305.

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| 44. | 2016 | Synthesis of β -C-Glycopyranosyl Aldehydes and 2,6-Anhydro-heptitols. | <i>J. Org. Chem.</i> , 80, 11169–11174. |
| 45. | 2016 | Synthesis of 3'-azido/-amino-xylobicyclonucleosides | <i>RSC advances</i> 2016 , 6, 17713-17719. |
| 46. | 2016 | Sugar-based novel chiral macrocycles for inclusion applications and chiral recognition | <i>Carbohydrate Res.</i> 2016 , 421, 25-32. |
| 47. | 2017 | Synthesis and biological properties of triazole-linked locked nucleic acid. | <i>Chemical Communications</i> , DOI: 10.1039/c7cc04092. |
| 48. | 2017 | Lipase-mediated Synthesis of Sugar-PEG-based Amphiphiles for Encapsulation and Stabilization of Indocyanine Green. | <i>RSC Advances</i> , 2017, 7, 37534-37541. |
| 49. | 2017 | C-4'-spiro-oxetano- α -L-ribonucleosides | <i>Carbohydrate Research</i> , 2017 , 445, 88-92. |
| 50. | 2017 | Synthesis, pharmacological evaluation and molecular docking of pyranopyrazole-linked 1,4-dihydropyridines as potent positive inotropes. | <i>Molecular Diversity</i> , DOI: 10.1007/s11030-017-9738-7. |
| 51. | 2017 | Chemoenzymatic synthesis, nanotization and anti-Aspergillus activity of optically enriched fluconazole analogues. | <i>Antimicrobial agents and chemotherapy</i> , DOI:10.1128/AAC.00273-17. |

Patents

1. Regioselective Acylation of Nucleosides **Ashok K Prasad**, Virinder S Parmar, Rajendra K Saxena and Gaurav Shakya, PCT: **WO2011 / 030353 (International PCT Application No. PCT/IN2010/000594)**.
2. Regioselective Acylation of Nucleosides **Ashok K Prasad**, Virinder S Parmar, Rajendra K Saxena and Gaurav Shakya, *Indian Patent Application No. 1885/DEL/2009*.
3. Dihydropyrimidinone compounds for the treatment of cardiovascular diseases and process for preparing the same VS Parmar, HG Raj and **Ashok K Prasad International Patent Application No. PCT/IN2009/000344**.
4. Coumarin Compounds for the treatment of Cardiovascular diseases and a process for preparing the same VS Parmar, HG Raj, SC Jain and **Ashok K Prasad International Patent Application No. PCT/IN2009/000359**.
5. Dihydropyrimidinone compounds for the treatment of cardiovascular diseases and process for preparing the same VS Parmar, HG Raj and **Ashok K Prasad Indian Patent Application 1414/DEL/2008**.
6. Coumarin Compounds for the treatment of Cardiovascular diseases and a process for preparing the same VS Parmar, HG Raj, SC Jain and **Ashok K Prasad Indian Patent Application 1495/DEL/2008**.
7. Coumarin Compounds for the Treatment of Mycobacterial Infections. Virinder S Parmar, Ashok K Prasad, Sunil K Sharma, HG Raj, Rashmi Tandon and Mridula Bose *International PCT Application No. PCT/IN2012/000242*.

Conference Presentations

1. Novel Anti-inflammatory Molecules from *Piper* Species at "Perspective and Challenges in Chemical and Biological Sciences" organized by IASST(Guwahati) and ISCBC(Lucknow), Guwahati, 28-30th Jan. 2012.
2. Glucose to Modified Nucleosides and pH sensitive Polymer for Drug Delivery Applications at "Frontiers in Pharmaceutical Sciences: Global Perspectives" organized by University of Rhode Island, USA, 28-30th Sept. 2012.
3. Glucose to pH sensitive Sugar-PEG Based Polymer and LNA Monomers: A Biocatalytic Approach at Department of Chemistry, Punjab University, 13-14th Feb. 2012.

4. Novel Nucleic Acid Architecture: Towards Antisense Drug Development at “Medicinal Chemistry and Pharmaceutical Sciences” organized by NIPER(RBL)-CDRI, Lucknow, 23-25th Feb. 2012.
5. Glucose to LNA and PEGylated Polymers for Targeted Drug Delivery Applications: Biocatalytic Approach at “National Seminar on Recent trends in Chemistry” organized by department of Chemistry, Sri Venkateshwara College, University of Delhi, 20-22 March 2012.
6. Biocatalysis: Synthesis of LNA and Sugar-PEG Based Co-Polymer for Drug Delivery Applications. Lucknow Univ. March 2012.
7. Greener Methodologies for Synthesis of LNA and Sugar-PEG Based Co-Polymer for Drug Delivery Applications. Professional Development Course, BHU, Varanasi, March 2012.
8. Natural Products and Their Analogs as Anti-inflammatory and Anti-TB Agents, BHU, Varanasi, March 2012.
9. Glucose to LNA, Nonionic Nucleoside Dimers and Sugar-PEG Based Co-Polymer for Drug Delivery Applications, Department of Chemistry, BITS, Pilani, May 2012.
10. Glucose to Modified Nucleosides and pH Sensitive Polymers for Drug Delivery Applications in National Conference CARBO XXVII on Prospects and Perspectives of Glycoscience and Allied Technology held at CFTRI, Mysore on 11 – 14 December 2012.
11. Chemoenzymatic Synthesis of Nucleosides and pH sensitive Sugar-PEG Co-Polymer of Importance at DRDE, Gwalior, Feb. 2013.
12. Glucose to Nucleosides and pH sensitive Sugar-PEG Based Co-Polymer of Importance: A Biocatalytic Approach at “Catalysis applied to biomass-towards sustainable processes and chemicals” organized by Universite De Technologie De Compiegne, France, 12-13th March 2013.
13. at “21st ISCB International Conference (ISCBC- 2015) organized by CDRI Lucknow, 25-28 February 2015.
14. Biocatalytic route to therapeutically important sugar modified nucleosides at “Catalysis applied to biomass-towards sustainable processes and chemicals” II organized by Universite De Technologie De Compiegne, France, 27-28th March 2014.
15. Glucose to Novel Nucleosides and Macrocyclic Architectures, MS University Baroda, Badodara, 17 July 2015.
16. Glucose to Novel Nucleosides and Macromolecules of Importance, Gorakh University, 13 July 2015.
17. Sugar Based Chiral [2]Pseudorotaxane and Amphiphiles for Drug Delivery Applications. ICMR Laboratory, Bhubaneswar, April 2015.
18. Sugar Modification for the Synthesis of Novel Nucleosides, Amphiphiles and Macromolecules of Importance. Indi-Japan International Symposium at JAIST, Japan, 2-3 March 2015.

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| Total Publication Profile |
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| <u>Books:</u> 1 |
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| <u>In Indexed/ Peer Reviewed Journals</u> 40 |
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| <u>Patent</u> 7 |
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| <u>Conference Presentations</u> 18 |
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Professional Societies Memberships

- Membership of "International Society for Nucleosides, Nucleotides and Nucleic Acids", France
- Life membership of "Indian Science Congress Association", Calcutta
- Life member of "Chemical Research Society of India (CRSI)", Bangalore
- Life member of "Association of Carbohydrate Chemists and Technologists (India)"
- Life member of "Indian Society of Chemists and Biologists", Lucknow
- Life Member of "Biotechnology Research Society of India"

Projects (Major Grants / Collaborations)

Principal Investigator, DU-DST Purse Grant Research Project entitled "Enzyme-mediated transformations of potential applications in environment and pharmaceutical sectors" (2010-2013).

Principal Investigator, DBT Research Project entitled "Biocatalytic synthesis and development of PEG-sugar based polymeric architectures for applications in drug delivery" (2009-2013).

Principal Investigator, NMPB Research Project entitled "Development of natural products/natural-product based cardiovascular agents" (2010-2013).

Co-Principal Investigator, IGSTC Research Project entitled "Chemoenzymatic synthesis and development of biodegradable, structurally persistent core-shell nano-architectures for drug delivery applications" (2012-15).

Principal Investigator, DRDO Research Project entitled "Chemical Synthesis and Characterization of 7,8-Diacetoxy-4-Methylthiocoumrins for Evaluation of its in vitro efficacy in Radiprotection and Mitigation" (2012-13).

Principal Investigator, DRDO Research Project entitled "Synthesis and Studies on Fire Extinguishing Capabilities of Some Fluorophosphonodiester and Fluorophosphotriesters" (2013-15).

Principal Investigator, DRDO Research Project entitled "Synthesis Characterization, Cytotoxicity and Cellular Uptake Study of Sugar-PEG Based Amphiphiles as Potential Delivery Agents" (2015-16).

Principal Investigator, Rasayan research project entitled "Synthesis of nucleoside- based bioactive compounds and their precursors" (2015-16).

Other Details