

Dr. Sanjay Kumar

Associate Professor in Chemistry

Specialization: Organic Chemistry

Email: sanjay2002@gmail.com

Contact Number: +91-9888339791



Education

M.Sc. Chemistry (1999, Kurukshetra University, Kurukshetra),

Ph.D. (2008, Punjabi University, Patiala)

Title of Ph.D. Thesis: “Synthesis of Novel Heterocycles of Biological Significance and New Synthetic methods”

Professional Experience:

Assistant Professor, Department of Chemistry, M. M. Modi College, Patiala, India (14/07/2008-13/07/2012)

Assistant Professor (Senior scale), Department of Chemistry, M. M. Modi College, Patiala, India (14/07/2012-13/07/2017)

Assistant Professor (Selection Grade), Department of Chemistry, M. M. Modi College, Patiala, India (14/07/2017-13/07/2020)

Associate Professor, Department of Chemistry, M. M. Modi College, Patiala, India (14/07/2020-Till date)

Raman Postdoctoral Fellow, Department of Chemistry, University of South Florida, FL, USA (November 2014 - March 2016)

Teaching Interests:

- Applications of Organic Molecular Spectroscopy
- Organic Synthesis
- Heterocyclic Chemistry
- Photochemistry and Pericyclic Reactions

Research Interest:

Organic Synthesis, Metal Organic Framework, Material Chemistry, Sensors

Publications

1. Bifunctional Metal-Organic Nanoballs Featuring Lewis Acidic and Basic Sites as a New Platform for One-Pot Tandem Catalysis, G. Verma, **Sanjay Kumar**, E. R. Slaughter, H. Vardhan, T. M. Alshahrani, Z. Niu, W.-Y. Gao, L. Wojtas, Y.-S. Chen, *ChemPlusChem*, **2024** (Accepted). <https://doi.org/10.1002/cplu.202400169>
2. Facile Layer Diffusion Technique for Synthesis of Terbium-Based Metal Organic Framework for Fluorometric Sensing of Hydroquinone, G. Singh, R. Verma, K. Kaur,

- Deepika, **Sanjay Kumar**, A. K. Malik, *Journal of Fluorescence*, **2024**, (Accepted). <https://doi.org/10.1007/s10895-024-03682-0>
- Up-converted white light emission in Er³⁺ doped MgAl₂O₄ nanocrystals, P. Bishnoi, **Sanjay Kumar**, K. Kumar, A. Vij and A. Thakur, *J. Appl. Physics*, **2024**, *135*, 124302. <https://doi.org/10.1063/5.0188938>
 - Advancements in Visible-Light-Induced Oxidation of Aromatic Alcohols: Insights into Photo-redox transformative Pathways, Gobind Kumar, Gaurav Bhargava, **Sanjay Kumar**, Jaspreet Rajput, Baljinder Gill, Parvesh Singh, Rupesh Kumar, *Inorganica Chimica Acta*, **2024**, 121935. <https://doi.org/10.1016/j.ica.2024.121935>
 - Terbium-based dual-ligand metal organic framework by diffusion method for selective and sensitive detection of danofloxacin in aqueous medium, Gurdeep Singh, Deepika Garg, **Sanjay Kumar**, Rajpal Verma, Ashok Kumar Malik, *Environmental Science and Pollution Research*, **2023**, *30*, 106015-106025. <https://doi.org/10.1007/s11356-023-29895-7>
 - Schiff base-functionalized metal-organic frameworks as an efficient adsorbent for the decontamination of heavy metal ions in water, Manpreet Kaur, **Sanjay Kumar**, Mohamad Yusuf, Jechan Lee, Ashok Kumar Malik, Younes Ahmadi, K.-H. Kim, *Environmental Research*, **2023**, 116811. <https://doi.org/10.1016/j.envres.2023.116811>
 - ESIPT-based dual-emissive perimidine derivative as a rapid and sensitive sensor for Cu²⁺ and Al³⁺: Construction of memory device, 2-to-1 encoder and 1-to-2 decoder, Ruhi Mehta, **Sanjay Kumar***, *Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy*, **2023**, 122471. <https://doi.org/10.1016/j.saa.2023.122471>
 - “In water” diastereoselective [3+2] cycloaddition reaction: Clean and green synthesis of pyrrolo[1,2-*a*]quinolines, M. Kaur, M. Yusuf, **Sanjay Kumar***, *Sustainable Chemistry and Pharmacy*, **2023**, *23*, 100926. <https://doi.org/10.1016/j.scp.2022.100926>
 - Cr dopant induced tailoring of intrinsic defects and trap distribution in MgAl₂O₄ nanocrystals: Electron spin resonance and thermoluminescence, Savita, **Sanjay Kumar**, Ankush Vij and Anup Thakur, *Journal of Physics D: Applied Physics*, **2023**, *56*, 075301. <https://doi.org/10.1088/1361-6463/acb2d8>
 - Physicochemical investigation and fluorescence quenching of biologically active pyrrole-containing push-pull chromophore by Ag nanoparticles, S. H. Al-Thaqafy, A. M. Asiri, M.E.M. Zayed, Md. Z. Alam, A. Ahmad, M. Fatima, **Sanjay Kumar***, S. A. Khan*, *Journal of Molecular Structure*, **2023**, *1274*, 134421. <https://doi.org/10.1016/j.molstruc.2022.134421>
 - Metal-Organic Frameworks as a New Platform for Enantioselective Separations, Gaurav Verma, Ruhi Mehta, **Sanjay Kumar*** and Shengqian Ma,* *Israel Journal of Chemistry*, **2021**, *61*, 708-726. <https://doi.org/10.1002/ijch.202100073>

12. Schiff Base-Functionalized Luminescent Metal-Organic Frameworks: Synthesis, Structure, Luminescence, and Sensing Applications, M. Kaur, **Sanjay Kumar**, M. Yusuf, J. Lee, R. J. C. Brown, K.-H. Kim, A. K. Malik, *Coordination Chemistry Review*, **2021**, 449, 214214. <https://doi.org/10.1016/j.ccr.2021.214214>
13. New Paradigms in Porous Framework Materials for Acetylene Storage and Separation, G. Verma, J. Ren, **Sanjay Kumar** and S. Ma,* *European Journal of Inorganic Chemistry*, **2021**, 4498-4507. (Front Cover) <https://doi.org/10.1002/ejic.202100635>
14. Structural and optical properties of thermally induced nanostructures in amorphous molybdenum oxide thin films, S. Kumari, P. Singh, H. Singh, K. Singh, A. Kumar, **Sanjay Kumar**, A. Thakur, *Journal of Materials Science: Materials in Electronics*, **2021**, 32, 24990–24996. <https://doi.org/10.1007/s10854-021-06957-5>
15. Indium-Organic Framework with soc Topology as a Versatile Catalyst for Highly Efficient One-Pot Strecker Synthesis of α -aminonitriles, G. Verma, K. Forrest, B. A. Carr, H. Vardhan, J. Ren, T. Pham, B. Space, **Sanjay Kumar**,* and S. Ma*, *ACS Applied Materials & Interfaces*, **2021**, 13, 52023–52033. (<https://doi.org/10.1021/acsami.1c09074>)
16. Morphological and optical studies of Gd₂O₃:Eu nanostructures synthesized via sacrificial template directed co-precipitation route, R. Priya, M. M. Domanska, Sanjay Kumar, O. P. Pandey, *Optics & Laser Technology*, **2021**, 143, 107357. (<https://doi.org/10.1016/j.optlastec.2021.107357>)
17. Probing the defects and trap distribution in MgAl₂O₄ nanocrystals through electron spin resonance and thermoluminescence, Savita, S. Dani, Sanjay Kumar, F. Singh, A. Vij,* A. Thakur*, *Journal of Physics D: Applied Physics*, **2021**, 54, 335303. (<https://doi.org/10.1088/1361-6463/ac03ec>)
18. Post-Synthesis Modification of Metal-Organic Frameworks Using Schiff Base Complexes for Various Catalytic Applications, M. Kaur, **Sanjay Kumar**, S. A. Younis, M. Yusuf, J. Lee, S.-H. Weon, K.-H. Kim*, A. K. Malik, *Chemical Engineering Journal*, **2021**, 423, 130230. (<https://doi.org/10.1016/j.cej.2021.130230>)
19. Microwave assisted one-pot synthesis, photophysical and physicochemical studies of novel biologically active heterocyclic Donor (D)- π -Acceptor (A) chromophore, S. A. Khan*, Q. Ullah, S. Syed, Alimuddin, A. S. A. Almalki, **Sanjay Kumar***, R. J. Obaid, M. A. Alsharif, S. Y. Alfaifi, H. Parveen, *Bioorganic Chemistry*, **2021**, 112, 104964. (<https://doi.org/10.1016/j.bioorg.2021.104964>)
20. A robust soc-MOF platform exhibiting high gravimetric uptake and volumetric deliverable capacity for on-board methane storage, G. Verma, **Sanjay Kumar***, H. Vardhan, J. Ren, Z. Niu, T. Pham, L. Wojtas, S. Wang, S. Butikofer, J. C E. Garcia, Y.-S. Chen, B. Space, S. Ma*, *Nano Research*, **2021**, 14, 512-517. (<https://doi.org/10.1007/s12274-020-2794-9>)

21. Synthesis and photophysical investigation of (BTHN) Schiff base as off-on Cd²⁺ fluorescent chemosensor and its live cell imaging, S.A. Khan, Q. Ullah, A.S.A. Almalki, **Sanjay Kumar**, R. J. Obaid, M. A. Alsharif, S. Y. Alfaifi, A. A. Hashmi, *Journal of Molecular Liquids*, **2021**, 328, 115407. (<https://doi.org/10.1016/j.molliq.2021.115407>)
22. Multi-Step Synthesis, Physicochemical investigation and optical properties of pyrazoline derivative: A Donor- π -Acceptor chromophore, S.A. Khan, Q. Ullah, S. Syed, Alimuddin, A.S.A. Almaki, R.J. Obaid, A. Alsharif, S.Y. Alfaifi, **Sanjay Kumar**, *Journal of Molecular Structure*, **2021**, 1227, 129667. (<https://doi.org/10.1016/j.molstruc.2020.129667>)
23. Excitation energy dependent switchable emission in SrZnO₂ nanophosphors: XAS and luminescence studies, M. Rao, M. Jain, P. Vashishtha, **Sanjay Kumar**, P. Rajput, G. Gupta, A. Vij and A. Thakur, *Journal of Materials Chemistry C*, **2020**, 8, 3147-3155. (<https://doi.org/10.1039/C9TC06714K>)
24. Regulation of the Degree of Interpenetration in Metal–Organic Frameworks, G. Verma, S. Butikofer, **Sanjay Kumar**, S. Ma, *Topics in Current Chemistry*, **2020**, 378, 4. (<https://doi.org/10.1007/s41061-019-0268-x>)
25. Chlorophyll Triggered One-Pot Synthesis of 3,4-Dihydropyrimidin-2(1H)-ones via Photo Induced Electron transfer reaction, S. Harsh, **Sanjay Kumar**, R. Sharma, Y. Kumar, R. Kumar, *Arabian Journal of Chemistry*, **2020**, 13, 4720-4730. (<https://doi.org/10.1016/j.arabjc.2019.11.002>)
26. Thickness dependent structural, morphological and optical properties of molybdenum oxide thin films, S. Kumari, K. Singh, P. Singh, **Sanjay Kumar** & A. Thakur, *SN Applied Sciences*, **2020**, 2, 1439. (<https://doi.org/10.1007/s42452-020-3193-2>)
27. Enhanced near-infrared luminescence in zinc aluminate bestowed by fuel-blended combustion approach, M. Jain, A. Gundimeda, A. Kumar, **Sanjay Kumar**, G. Gupta, S.-O. Won, K.-H. Chae, A. Vij, A. Thakur, *Journal of Alloys and Compounds*, **2019**, 797, 148-158. (<https://doi.org/10.1016/j.jallcom.2019.04.257>)
28. Defect induced broadband visible to near-infrared luminescence in ZnAl₂O₄ nanocrystals, M. Jain, Manju, A. Gundimeda, **Sanjay Kumar**, G. Gupta, S.-O. Won, K.-H. Chae, A. Vij, A. Thakur, *Applied Surface Science*, **2019**, 480, 945-950. (<https://doi.org/10.1016/j.apsusc.2019.02.198>)
29. Partially Interpenetrated NbO Topology Metal–Organic Framework Exhibiting Selective Gas Adsorption, G. Verma, **Sanjay Kumar**,* T. Pham, Z. Niu, L. Wojtas, J. A. Perman, Y.-S. Chen, S. Ma, *Crystal Growth & Design*, **2017**, 2711-2717. (<https://doi.org/10.1021/acs.cgd.7b00198>)
30. Anionic Metal Organic Framework for Selective Dye Removal and CO₂ Fixation, **Sanjay Kumar**, G. Verma, W.-Y. Gao, Z. Niu, L. W. and S. Ma, *European Journal of Inorganic Chemistry*, **2016**, 4373–4377. (<https://doi.org/10.1002/ejic.201600218>)

31. Green synthesis, antibacterial activity and computational study of pyrazoline and pyrimidine derivatives from 3-(3, 4-dimethoxy-phenyl)-1-(2, 5-dimethyl-thiophen-3-yl)-propanone, SA Khan, AM Asiri, **Sanjay Kumar**, K Sharma, *European Journal of Chemistry*, **2014**, 5, 85-90. (<https://doi.org/10.5155/eurjchem.5.1.85-90.789>)
32. Solvatochromic Behaviour of Formazans and Contribution of Kamlet –Taft Coefficients towards Spectral Shifts of Formazans in Different Organic Solvents, Sanjeev Kumar, Rajeev Sharma, **Sanjay Kumar** and Nitika, *Chemical Science Transactions*, **2014**, 3, 919. (<https://doi.org/10.7598/cst2014.836>)
33. Glycerol Mediated, One Pot, Multicomponent Synthesis of Dihydropyrano[2,3-c]pyrazoles" Harvinder S. Sohal, Arun Goyal, Rajeev Sharma, Rajshree Khare and **Sanjay Kumar**, *European Journal of Chemistry*, **2013**, 4, 457-460. (<https://doi.org/10.7598/cst2014.836>)
34. A Facile, One Pot, Solvent Free Synthesis of 14-Alkyl or aryl-14H-dibenzo[a,j]xanthenes and 12-Aryl/alkyl-8,9,10,12-tetrahydrobenzo[a]xanthen-11-one Derivatives, **Sanjay Kumar**, Arun Goyal, Harvinder S. Sohal, and Sanjeev Kumar, *Chemical Science Transactions* **2013**, 2, 1459-1465. (<https://doi.org/10.7598/cst2013.518>)
35. A practical, clean and green synthesis of Vibrindole and bis(indolyl)methanes catalyzed by alum ($KAl(SO_4)_2 \cdot 12H_2O$) in water. **Sanjay Kumar**, I. S. Grover and J. S. Sandhu, *Indian Journal of Chemistry*, **2009**, 48B, 585-589. (<http://nopr.niscair.res.in/handle/123456789/3866>)
36. An efficient synthesis of 1,5-benzodiazepines using $GaCl_3$ under solvent free conditions. **Sanjay Kumar** and J. S. Sandhu, *Indian Journal of Chemistry*, **2008**, 47B, 1463-66. (+)
37. Hantzsch Reaction: New developments in the Hantzsch-1,4-dihydropyridines, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Journal of Scientific & Industrial Research*, **2008**, 97-111. (<http://nopr.niscair.res.in/handle/123456789/753>)
38. $RuCl_3 \cdot xH_2O$: An efficient synthesis of 1,1-diacetates under solvent free conditions, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Synthetic Communication*, **2008**, 38, 106-113. (<https://doi.org/10.1080/00397910701650831>)
39. Gallium(III) halides catalyzed, microwave enhanced synthesis of 3,4-dihydropyrimidin-2(1H)-ones under solvent free conditions, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Indian Journal of Chemistry*, **2007**, 46B, 1886-1889. (<http://nopr.niscair.res.in/handle/123456789/718>)
40. Aluminium(III) halides mediated synthesis of 5-unsubstituted 3,4-dihydropyrimidin-2(1H)-ones via three component Biginelli like reaction, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Indian Journal of Chemistry*, **2007**, 46B, 1690-1694. (<http://nopr.niscair.res.in/handle/123456789/740>)
41. Iron(III) chloride promoted solvent free, facile and efficient Friedlander synthesis of quinolines, **Sanjay Kumar**, A. Saini and J. S. Sandhu, *Synthetic Communication*, **2007**, 37, 4071-4078. (<https://doi.org/10.1080/00397910701575541>)

42. Biginelli Reaction-Review, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Journal of Indian Chemical Society*, **2007**, 84, 959-970.
43. Gallium Chloride: An efficient catalyst for facile preparation of *gem*-diacetates from aldehydes, **Sanjay Kumar**, A. Saini, and J. S. Sandhu, *Arkivoc*, **2007** (xiv), 27-33. (<https://doi.org/10.3998/ark.5550190.0008.e04>)
44. New strategy for the oxidation of Hantzsch 1,4-dihydropyridines and dihydropyrido[2,3-d]pyrimidines catalysed by DMSO under aerobic conditions, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Synthetic Communication*, **2007**, 37, 2317-2324. (<https://doi.org/10.1080/00397910701410442>)
45. LiBr-Mediated, solvent free von Pechmann reaction: Facile and efficient method for the synthesis of 2*H*-chromen-2-ones, **Sanjay Kumar**, Anil Saini, and J. S. Sandhu, *Arkivoc*, **2007**, (xv), 18-23. (<https://doi.org/10.3998/ark.5550190.0008.f03>)
46. A new LiBr catalysed facile and efficient method for the synthesis of 14-Alkyl or aryl 14*H*-dibenzo [*a*, *j*]xanthenes and Tetrahydrobenzo[*b*]pyrans under thermal and microwave heating, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Synlett*, **2006**, 1928-1932. (<https://doi.org/10.1055/s-2006-947339>)
47. Cerium catalysed Michael addition to α , β -unsaturated oximes: A facile and efficient synthesis of substituted pyridines, **Sanjay Kumar**, A. Saini and J. S. Sandhu, *Indian Journal of Chemistry*, **2006**, 45B, 429-432. (<http://nopr.niscair.res.in/handle/123456789/6218>)
48. AlCl₃ mediated three component cyclocondensation for the synthesis of 5-unsubstituted 3,4-dihydropyrimidin-2(*IH*)-ones, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Indian Journal of Chemistry*, **2006**, 45B, 684-688. (<http://nopr.niscair.res.in/handle/123456789/6382>)
49. An Efficient and General Method for the Deoxygenation of Organic *N*-oxides using Zn(OTf)₂ and Cu(OTf)₂, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Synlett*, **2006**, 395-398. (<https://doi.org/10.1055/s-2006-926269>)
50. Zinc mediated facile and efficient dehydration of aldoximes to nitriles, A. Saini **Sanjay Kumar** and J. S. Sandhu, *Indian Journal of Chemistry*, **2005**, 44B, 1427-1429. (<http://nopr.niscair.res.in/handle/123456789/9145>)
51. Cobalt (II) chloride or manganese (II) chloride or tin (II) chloride promoted one pot synthesis of dihydropyrimidin-2 (*IH*)-ones using microwave irradiation, **Sanjay Kumar**, A. Saini and J. S. Sandhu, *Indian Journal of Chemistry*, **2005**, 44B, 762-767. (<http://nopr.niscair.res.in/handle/123456789/8986>)
52. A general method for the deoxygenation of aromatic *N*-oxides using RuCl₃.*x*H₂O, **Sanjay Kumar**, A. Saini and J. S. Sandhu, *Tetrahedron Letters*, **2005**, 46, 8737-8739. (<https://doi.org/10.1016/j.tetlet.2005.10.047>)

53. Nickel mediated Biginelli like three component coupling reaction: A solvent free microwave assisted synthesis of spiro-fused heterocycles, A. Saini, **Sanjay Kumar** and J. S. Sandhu, *Indian Journal of Chemistry*, **2004**, *43B*, 2482-2484. (<http://nopr.niscair.res.in/handle/123456789/21390>)
54. Tin(II) chloride catalysed one pot efficient and novel preparation of dihydropyrimidin-2(1H)-ones, **Sanjay Kumar**, A. Saini and J. S. Sandhu, *Indian Journal of Chemistry*, **2004**, *43B*, 1485-1486. (<http://nopr.niscair.res.in/handle/123456789/21305>)

Book/Book chapter

1. D. Singh, **Sanjay Kumar** and A. Thakur, 'Graphene based Nanocomposites for Energy Applications', in *Advanced Ceramics for Energy and Environmental Applications*, A. Kumar ed.; CRC Press, **2021**; pp.159-178 (10.1201/9781003005155-7) e-ISBN: 978-100-3005-15-5.
2. Manju, M. Jain, **Sanjay Kumar**, A. Vij, and A. Thakur, Metal Organic Frameworks (MOFs) for Smart Applications in "*Current and Future Developments in Nanomaterials and Carbon Nanotubes, vol. 4 Synthesis and Applications of Semiconductor Nanostructures*", K.S. Dhaliwal ed.; Bentham Science Publishers Pte. Ltd. Singapore, **2023**, pp144-181, eISBN: 978-981-5080-11-7.

Conference / Seminars

A) Resource Person / Invited Lectures:

1. Lecture delivered on 'Chemistry and Environment' at S.D. College (Lahore), Ambala Cantt., Haryana (March 17, 2011).
2. Chaired a Technical Session at National Chemical Constellation Cheminar, August 20-21, 2011, Department of Chemistry, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, Punjab.
3. Resource Person at national seminar on 'Toxic Trails of Punjab' on March 01-02, 2012, A.S. College, Khanna.
4. Chaired a session at 'Recent Trends in Chemical, Environmental and Material Sciences,' January 24, 2018, D.A.V. College, Abohar, Punjab.
5. Preside as Judge in the 'Regional Level Science Exhibition' organized by CBSE, New Delhi at S.D. Vidya School, Ambala Cantt. (January 24-25, 2019)
6. Resources person at National conference on 'Research in Chemical Sciences: Current Scenario (RCSCS-2019),' March 29, 2019, Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab.
7. Chaired as session in the *International Conference on Recent Advances in Applied Sciences (ICRAAS-2022)* organized by the Department of Chemistry, Maharishi Markandeshwar (Deemed to be University), Mullana, India in association with World Researchers Association (WRA) during March 23-24, 2022.

8. Chaired a session in the *International Conference on Integrated Approaches in Science & Technology for Sustainable Future (IASTSF-2022)* organized by J. C. Bose University of Science and Technology, YMCA, Faridabad in collaboration with American Chemical Society (ACS-ISC) on 28th February-1st March 2022.

B) Paper presented:

1. Selective cleavage of oximes to carbonyls using N-bromo-N-sodio-p-toluenesulphonamide, Sanjay Kumar, A. Saini and J. S. Sandhu, Presented at International Conference on Molecules to Materials (ICMM), March 3-4, 2006, SLIET, Longowal, Punjab, India.
2. Synthesis of tetrahydropyrimidine-5,5(2H)-dicyanitrile catalyzed by toluene sulfonic acid, Sanjay Kumar & Davinder Singh, presented at 'National Chemical Constellation Cheminar,' 20-21 August, 2011 Department of Chemistry, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, Punjab.
3. Ionic liquid mediated synthesis of some multifunctionalised pyrimidine derivatives and evaluation of their antibacterial activity, Sanjay Kumar, presented at '14th Punjab Science Congress', February 07-09, 2011, Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur, Punjab.
4. Clean and green synthesis of dipyrzolo[3,4-b:4',3'-e]pyridine derivatives, Sanjay Kumar and Anish Sharma, presented at International Conference on 'Innovations in Chemistry for Sustainable Development (ICSD-2011),' 03-05 December, 2011, Department of Chemistry, Panjab University, Chandigarh.
5. Bronsted acid catalyzed synthesis of some pyrazolo[3,4-d]pyrimidine derivatives, Sanjay Kumar, presented at International conference on Interdisciplinary areas with Chemical Sciences on 30th October-1st November, 2013 at Panjab University, Chandigarh.
6. An Efficient and Rapid Bromination of Activated Aromatic Compounds Under Mild Conditions, Sanjay Kumar and Akashdeep, Presented at national seminar on 'Chemistry for a better tomorrow: current trends and challenges,' March 08, 2014, Mata Gujri College, Fatehgarh Sahib
7. Synthesis of 2-aryl-1-arylmethyl-1H-benzimidazoles using silica sulfuric acid as a heterogeneous reusable catalyst, Sanjay Kumar and Rajeev Sharma, presented at 'Multi-disciplinary National Conference "Science colloquium" - Emerging Trends in Basic and Applied Sciences,' on 06-07 March 2014, DAV College Jalandhar, Punjab.
8. Efficient and Practical Synthesis of 2-Amino-4H-chromene Derivatives Using Ionic Liquids, Sanjay Kumar, Gurpreet Singh and Nitika, presented at national conference on 'Advances In

Chemical & Environmental Sciences,' Arya P.G. College, Panipat, Haryana, February 27-28, 2014.

9. e-Learning in Chemistry - It's advantages and disadvantages, Sanjay Kumar, national seminar on 'Integrated Teacher Education with Technological Advances,' February 11, 2014, Mata Sahib Kaur Khalsa Girls College of education, Dhamo Majra, Patiala.
10. Synthesis of tetrahydropyrimidine derivatives and evaluation of their antibacterial activity, Sanjay Kumar, 2nd national symposium on 'Emerging Trends in Biological Sciences' November 12, 2016, Multani Mal Modi College, Patiala, Punjab
11. Synthesis of hybrid composites for the selective adsorption/separation of contaminants, Sanjay Kumar, 9th National Seminar on 'New Paradigm in Chemical Sciences: Synthetic and Analytical Perspectives-2017' 09-10 February, 2017, Punjabi University Patiala, Patiala.
12. Synthesis of metal organic framework for the selective adsorption and separation of dyes, Sanjay Kumar, National conference 'Clean & Green Energy: The Chemical & Environmental Aspects' at Bhaskaracharya College of Applied Sciences, University of Delhi, February 16-17, 2017.
13. Synthesis of 2-amino-5-cyano-6-hydroxy-4-arylpyrimidines and evaluation of their antibacterial activity, Sanjay Kumar, 'Recent Trends in Chemical, Environmental and Material Sciences,' 24 January, 2018, D.A.V. College, Abohar, Punjab.
14. Bronsted acidic heterogenous catalyst for the facile synthesis of pyrano[3,2-c]coumarins, Sanjay Kumar & Vipul Batra, 10th national conference on 'Chemical and Environmental Sciences: Innovations and Advances-2018, CES: IA-2018,' February 15-16, 2018 at Punjabi University Patiala.
15. Succinimidinium *N*-sulfonic acid hydrogen sulfate ([SuSA-H]⁺HSO₄⁻) as an efficient Ionic liquid catalyst for the synthesis of tetrahydropyrimidin-2[1H]-ones, Shubham Bansal and Sanjay Kumar 'Recent Trends in Chemical and Environmental Sciences,' Department of Chemistry, Punjabi University, Patiala, February 07-08, 2019.
16. Succinimidinium *N*-sulfonic acid hydrogen sulfate as an efficient Ionic liquid catalyst for the synthesis of pyrano[3,2-c]coumarins under solvent free conditions, Shubham Bansal and Sanjay Kumar, 'Recent Advances in Chemical and Environmental Sciences' April 11-12, 2019, Multani Mal Modi College, Patiala
17. Partially interpenetrated Metal Organic Framework Exhibiting Selective CO₂ Adsorption, Sanjay Kumar, in National seminar o 'Hazardous Waste: education, Research & Management Strategies,' December 20-21, 2019, Government College, Una, Himachal Pradesh

18. Theoretical studies on regiospecific synthesis of some new annulated spiro[indoline-3,1'-indolizin]-2-ones, Manpreet Kaur, Mohamad Yusuf and Sanjay Kumar, in 12th National conference on 'Chemical and Environmental Sciences: Advanced Innovations - 2020' Department of Chemistry, Punjabi University, Patiala, February 19-20, 2020.
19. Presented a paper '*ESPIT-based perimidine derivative for sensing of Cu²⁺ and Al³⁺: Construction of logic gates and real sample analysis*' in 13 in series and 1st International conference 'Recent Advances in Chemistry-2023' held at Punjabi University Patiala on February 23-24, 2023.

C) Attended

1. Revised Accreditation Framework (RAF): Prospects and Challenges for rural and Semi Urban Colleges, IQAC, Mata Gujri College, Fatehgarh Sahib, September 13, 2019.

Ph.D Students

1. Manpreet Kaur - Studies on 1,3-Dipolar Cycloaddition Reactions: Synthesis of New Benzo-Fused Indolizines (as Co-supervisor, Date of Registration - **27 August, 2019**)
2. Gurdeep Singh – Synthesis and Characterization of metal organic frameworks for the adsorption and sensing applications of target compounds (as Co-supervisor, Date of Registration - **17 June, 2021**)

M.Phil/M.Sc Dissertations:

M.Phil.

1. Aruna Sharma (2009) - Synthesis of Dihydropyridine Derivatives under Microwave Irradiation and Solvent Free Conditions
2. Vipin Singla (2009) - Synthesis and Characterization of Pyrimidine Derivatives

M.Sc. Dissertations

1. **Gurcharan Singh** (2011) - Synthesis, Characterization and Evaluation of Antibacterial Activity of Pyrazolo[3,4-*d*]pyrimidine Derivatives
2. **Avneet Kaur** (2011)- Synthesis and Evaluation of Antibacterial Activity of Pyrimidine-5-carbonitrile Derivatives
3. **Rohit Saini** (2011)- Synthesis, Characterization and Evaluation of Antibacterial Activity of Spiro fused Pyrimidine Derivatives

4. **Anish Sharma** (2011) - Synthesis of Some Dipyrazolo[3,4-b:4',3'-e]pyridine and Evaluation of their Antibacterial Activity.
5. **Davinder Singh** (2011) – Synthesis of Some Pyrimidine dicyanitrile derivatives and Evaluation of their Antibacterial Activity
6. **Deepshikha** (2011) - Synthesis of Some alkylated Pyrimidine derivatives and Evaluation of their Antibacterial Activity
7. **Navleen Kaur** (2011) - Synthesis of Some Pyrazolopyrimidine derivatives and Evaluation of their Antibacterial Activity
8. **Suman Pathania** (2012) - Synthesis, Characterization and Evaluation of Antibacterial Activity of 1,4-Dihydropyridine-3-Carbonitrile Derivatives
9. **Meena Kumari** (2012) - Synthesis, Characterization and Evaluation of Antibacterial Activity of 4H-Pyran-3-Carbonitrile Derivatives
10. **Gurpreet Singh** (2013) – Synthesis, Characterization and Evaluation of Antibacterial Activity of 2-Amino-3-cyanochromene Derivatives
11. **Reena** (2017) - Synthesis, Characterization and Evaluation of Antibacterial Activity of Pyrazole based Pyrido[2,3-*d*]pyrimidine-5,7-dione derivatives
12. **Ankita Sharma** (2017) - Synthesis, Characterization and Evaluation of Antibacterial Activity of 1*H*-Pyrazolo[3,4-*d*]pyridine carboxylate derivatives
13. **Seema** (2017) - Synthesis, Characterization and Evaluation of Antibacterial Activity of 1*H*-Pyrazolo[3,4-*d*]pyridine-5-carbonitrile derivatives
14. **Shubham Bansal** (2018) - Synthesis, Characterization and Evaluation of Antibacterial Activity of ethyl 5-cyano-6-(dicyanomethylidene)-2-methyl-4-aryl-1,4,5,6-tetrahydropyridine-3-carboxylate derivatives

Workshops and training courses

1. Attended workshop on 'IPRs Awareness Workshop' organized by NSS Department, Punjabi University, Patiala and Punjab State Council of Science & Technology (PSCST), Chandigarh (November 19, 2008)
2. Attended camp on Astronomy and Astrophysics organized by Punjab State Council of Science & Technology (PSCST), Chandigarh and M. M. Modi College, Patiala (September 20-22, 2010).
3. Attended NSS camp organized by M. M. Modi College, Patiala (December 16-22, 2010)
4. Attended Orientation Course at Academic Staff College, Punjabi University, Patiala. (October 01-21, 2012)
5. Attended Refresher Course at Academic Staff College, Punjabi University, Patiala. (May 06-25, 2013)

6. Attended UGC Sponsored Faculty Development Program at Multani Mal Modi College, Patiala. (July 01-15, 2014)
7. Attended UGC Sponsored Faculty Development Program at Multani Mal Modi College, Patiala. (January 09-16, 2017)
8. Attended UGC Sponsored Faculty Development Program at Multani Mal Modi College, Patiala. (July 20-28, 2018)
9. Attended UGC Sponsored Faculty Development Program at Multani Mal Modi College, Patiala. (July 17-22, 2019)
10. Attended Annual Refresher Programme in Teaching (ARPIT) [September 01, 2019 to December 31, 2020; Exam on February 16, 2020]
11. Attended One day workshop on ‘Basics of Rheology and Dynamic Light Scattering’ at GSSDGS Khalsa College, Patiala (March 06, 2020)
12. Attended online Faculty Development Programme: National Webinar entitled “National Workshop on Development of Teacher’s e-kit for Chemistry” organized by Guru Angad Dev Teaching Learning Centre SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) of MHRD held on April 21, 2020.
13. Attended online Faculty Development Programme: National Webinar entitled “Re-engineering Higher Education: A Seamless Knowledge Management System for the University” organized by Guru Angad Dev Teaching Learning Centre SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) of MHRD held on April 22, 2020.
14. Attended two days online Hands-on Workshop on ‘Molecular Docking & MD Simulations’ organized by EdGene BioMed held on May 02-03, 2020.
15. Attended online Faculty Development Programme: National Webinar entitled “Challenges & Opportunities before Higher Education due to COVID-19” organized by Guru Angad Dev Teaching Learning Centre SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) of MHRD held on May 02, 2020

16. Participated in three days National level Faculty Development Programme (Workshop) on “Skill Development for Online Teaching” organized by the IQAC of Bhavan’s College, Andheri (W) Mumbai held on May 05-07, 2020.
17. Attended National webinar entitled “Research Publication: Skills, Ethics and Misconducts” organized by Department of Chemistry, Kumaraguru College of Technology, Coimbatore held on May 15, 2020.
18. Participated in participated in Six Days International Faculty Development Program titled “Novel Materials for Energy and Biomedical (Covid-19) Healthcare Applications” organized by Department of Science & Humanities, M. Kumarasamy College of Engineering, Karur held on May 11-16, 2020.

Conference/workshop organized

1. Organized 2nd national conference on ‘Recent Advances in Chemical and Environmental Sciences’ (RACES -2010), January 22-23, 2010. (as Organizing Secretary)
2. Organized 3rd national conference on ‘Recent Advances in Chemical and Environmental Sciences’ (RACES -2011), February 28-March 01, 2011. (as Organizing Secretary)
3. Organized 6th national conference on ‘Recent Advances in Chemical and Environmental Sciences’ (RACES -2013), November 13-14, 2013. (as Organizing Secretary)
4. Organized 7th national conference on ‘Recent Advances in Chemical, Biological and Environmental Sciences’ (RACES -2015), January 30-31, 2015. (as Organizing Secretary)
5. Organized ‘Workshop on Modern Techniques in Sciences.’ (July 11-20, 2016)
6. Organized 9th national conference on ‘Recent Advances in Chemical, Biological and Environmental Sciences’ (RACES -2018), February 09-10, 2018. (as Organizing Secretary)
7. Organized 10th national conference on ‘Recent Advances in Chemical and Environmental Sciences’ (RACES -2019), April 11-12,2019. (as Coordinator)

Achievements, Awards and Recognitions

- Awarded Raman Fellowship for Post-Doctoral Research in USA by University Grants Commission (UGC), New Delhi. [5-80/2014(IC)]
- Research Project — Funded by UGC, New Delhi. (F. No. 8-2(52)/2011(MRP/NRCB))
- Assistant Registrar (House Examinations) since August 2010 to December 2017

- Worked as an expert panelist in a doctoral committee for the research proposal presentation of Ph.D. candidate at NIIT University, Rajasthan (May 23, 2018)
- Member, Internal Quality Assurance Cell (IQAC)
- Member, UGC-CPE committee of the College
- Assistant registrar (House Examination) from 2010-2016
- Research coordinator for the college from January 2017

Membership

- Member, Board of Postgraduate Studies in Chemistry, Punjabi University, Patiala (....., 2023 to December 31, 2024)
- Member, Faculty of Physical Sciences, Punjabi University, Patiala (September 03, 2021 to January 11, 2023).
- Member, Board of Undergraduate Studies in Chemistry, Punjabi University, Patiala (January 25, 2019 to December 31, 2020).
- Member, Board of Postgraduate Studies in Chemistry, Punjabi University, Patiala (February 18, 2020 to December 31, 2020).
- Life Member, Indian Science Congress Association, Kolkata. (L22068)
- Life Member, Indian Science Congress Association, Haridwar Chapter. (No. 0158)
- Life member, Indian Society of Analytical Scientists, Delhi Chapter (LM-30/2013)