Name: **Dr. Harjinder Singh**

Designation: Assistant Professor

Specialization: Organic Chemistry

Email: bhatiachem1987@gmail.com

Contact Number: +91- 7888973540

Education

M.Sc. (Hons. School) Chemistry (2010, Department of Chemistry, Panjab University, Chandigarh)

NATIONAL ELIGIBILITY TEST (NET)-JRF:- 2010.

Ph.D. Organic Chemistry (5th November, 2014, Department of Chemistry, University of Delhi).

Title of Thesis:- Synthesis of Substituted 1,2,3-Triazoles, their Conjugates and Evaluation of Biological and/or Photophysical Properties.

Professional Experience:

Department of Chemistry, M.M. Modi College, Patiala, India (02 February, 2016 to till date)

Department of Chemistry, SGTB Khalsa College, Delhi University, Delhi (July 2014 to January, 2016)

Teaching Interests:

- Organic Chemistry
- Stereochemistry
- Spectroscopy
- Reaction Mechanisms

Research Interest:

Computational organic Chemistry, Synthetic Organic Chemistry, Medicinal Chemistry

Publications

1. Jayant Sindhu, **Harjinder Singh**, J.M. Khurana, Chetan Sharma, K.R. Aneja. "Multicomponent synthesis of novel 2-aryl-5-((1-aryl-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazoles using Cu(I) as catalyst and their antimicrobial evaluation". *Aust. J. Chem*., (2013) **66:** 710 – 717. https://www.publish.csiro.au/ch/ch13082

2. **Harjinder Singh**, Jayant Sindhu and J.M. Khurana "Efficient, green and regioselective synthesis of 1,4,5-trisubstituted- 1,2,3-triazoles in ionic liquid [bmim]BF4 and in task-specific basic ionic liquid [bmim]OH", *J. Iran. Chem. Soc*., (2013) **10:** 883 – 888. https://link.springer.com/article/10.1007/s13738-013-0224-6

3. **Harjinder Singh,** Jayant Sindhu, J.M. Khurana, Chetan Sharma, K.R. Aneja. "A facile eco–friendly one pot five component syntheses of novel 1,2,3-triazole linked penta substituted 1,4-dihydropyridines and their biological and photophysical studies". *Aust. J. Chem.*, (2013) **66:** 1088 – 1096. https://www.publish.csiro.au/ch/CH13217
4. **Harjinder Singh**, Jayant Sindhu and J.M. Khurana. "Synthesis of biologically as well industrially important 1,4,5-trisubstituted-1,2,3-triazoles using highly efficient, green and recyclable DBU-H_2O catalytic system". *RSC Adv.,* (2013) **3:** 22360-66**.** https://pubs.rsc.org/en/content/articlelanding/2013/ra/c3ra44440f/unauth#!divAbstract

5. Jayant Sindhu, **Harjinder Singh** and J. M. Khurana**, "**A green, multicomponent, regio- and stereoselective 1,3-dipolar cycloaddition of azides and azomethine ylides generated *in situ* with bifunctional dipolarophiles using PEG-400". *Mol. Diversity*, (2014) **18,:** 345-355. https://link.springer.com/article/10.1007/s11030-014-9505-y

6. **Harjinder Singh**, Sudesh Kumari and J.M. Khurana "A new green approach the synthesis of 12-aryl-8,9,10,12-tetrahydrobenzo[*a*]xanthene-11-one derivatives using task specific acidic ionic liquid [NMP]H_2PO_4," *Chin. Chem. Lett***.,** (2014) **25:** 1336-1340. https://www.sciencedirect.com/science/article/abs/pii/S100184171400223X
7. **Harjinder Singh**, Jayant Sindhu, J.M. Khurana, Chetan Sharma, K.R. Aneja "Efficient one pot synthesis of xanthene-triazole-quinoline/conjugates and evaluation of their antimicrobial activity." *J. Brz. Chem. Soc.,* (2014) **25 (7):** 1178-1193. http://www.scielo.br/scielo.php?pid=S0103-50532014000700006&script=sci_arttext

8. **Harjinder Singh,** Jayant Sindhu, J.M. Khurana, Chetan Sharma, K.R. Aneja. "Synthesis, biological evaluation and photophysical studies of novel 1,2,3-triazole linked azo dyes." *RSC Adv.,* (2014). **4:** 5915- 26**.** https://pubs.rsc.org/en/content/articlelanding/2013/ra/c3ra44314k/unauth#!divAbstract

9. **Harjinder Singh**, Jayant Sindhu, J.M. Khurana, Chetan Sharma, K.R. Aneja "Ultrasound promoted one pot synthesis of novel fluorescent triazolyl spirocyclicoxindoles using DBU based task specific ionic liquids and their antimicrobial activity." *Eur. J. Med. Chem*., (2014) 77**:** 145-54**.** https://www.sciencedirect.com/science/article/abs/pii/S0223523414002207

10. **Harjinder Singh**, Jayant Sindhu and J.M. Khurana "Determination of dipole moment, solvatochromic studies and application as turn off-on fluorescence

chemosensor of new 3-(4-(dimethylamino)phenyl)-1-(5-methyl-1-(naphthalen-1-yl)-1*H*-1,2,3-triazol-4-yl)prop-2-en-1-one". *Sens Actuators B Chem*., (2014) **192:** 536– 542**.**
https://www.sciencedirect.com/science/article/abs/pii/S0925400513013397

11. Jayant Sindhu, **Harjinder Singh**, J. M. Khurana, Chetan Sharma and K.R. Aneja "Multicomponent domino process for the synthesis of some novel (Z)-5-(arylidene)-3-((1-aryl-1H-1,2,3-triazol-4-yl)methyl)thiazolidine-2,4-diones using PEG-400 as an efficient and green media and their antimicrobial evaluation," *Chin. Chem. Lett*., (2015) 26: **50-54.**
https://www.sciencedirect.com/science/article/abs/pii/S1001841714003799

12. Jayant Sindhu, **Harjinder Singh** and J. M. Khurana. "Efficient and green synthesis of spiro[diindenopyridine-indoline]triones using PEG-OSO_3H-H_2O and [NMP]H_2PO_4 under conventional heating and ultrasonic irradiation and their photophysical studies" *Synth. Commun*., (2015) **45:** 202-210.
https://www.tandfonline.com/doi/abs/10.1080/00397911.2014.906616

13. M. Rajeswari, Jayant Sindhu, **Harjinder Singh** and J. M. Khurana,. "An efficient, green synthesis of novel regioselective and stereoselective indan-1,3-dione grafted spirooxindolopyrrolizidine linked 1,2,3-triazoles via a one-pot five-component condensation using PEG-400". *RSC Adv.,* (2015) **5:** 39686-39691**.**
https://pubs.rsc.org/en/content/articlelanding/2015/ra/c5ra03505h/unauth#!divAbstract

14. **Harjinder Singh**, Jayant Sindhu and J.M. Khurana. "Synthesis, fluorescent properties of xanthene - aminoquinoline derivatives and application as first turn off fluorescent chemosensor for selective and sensitive detection of Th^{+4} ions", *Optical materials***,** (2015) **42:** 449–457**.**
https://www.sciencedirect.com/science/article/abs/pii/S0925346715000828
15. **Harjinder Singh,** Jayant Sindhu and J.M. Khurana "Synthesis, photophyscical study of new 7-chloroquinoline based triazolyl chalcones and their derivatives". *J Lumin***.,** (2015) **158:** 340-350.
https://www.sciencedirect.com/science/article/abs/pii/S0022231314006188

16. Jayant Sindhu, **Harjinder Singh**, J. M. Khurana, Jitender Kumar Bhardwaj, Priyanka Saraf and Chetan Sharma, "One-pot four component synthesis of functionalized 1*H*-1,2,3-triazole tethered pyrazolo[3,4-*b*]pyridin-6(7*H*)-ones as novel apoptosis inducers and anti-microbial agents" *Med Chem Res,* (2016) **25:** 1813**.**
https://link.springer.com/article/10.1007/s00044-016-1604-0

17. Sudesh Kumari, **Harjinder Singh**, and J.M. Khurana. ***"***An efficient green approach for the synthesis of novel triazolyl spirocyclic oxindole derivatives via one-pot five component protocol using DBU as catalyst in PEG-400". *Tetrahedron Letters.* (2016) **57,:** 3081–3085*.*
https://www.sciencedirect.com/science/article/pii/S0040403916306177

18. **Harjinder Singh**, Garima Khanna, Bhaskar Nand and J.M. Khurana. "Metal-free synthesis of 1,2,3-triazoles by azide–aldehyde cycloaddition under ultrasonic irradiation in TSIL [DBU-Bu]OH and in hydrated IL Bu_4NOH under heating." *Montash Chem.,* (2016) **147:** 1215-19**.**
https://link.springer.com/article/10.1007/s00706-015-1623-4

19. **Harjinder Singh**, Garima Khanna and J.M. Khurana. "DBU catalyzed metal free synthesis of fused 1,2,3-triazoles through [3+2] cycloaddition of aryl azides with activated cyclic C-H acids." *Tetrahedron Letters.* (2016) **57:** 3075–3080
https://www.sciencedirect.com/science/article/pii/S0040403916306153

20. Ashima Singh, **Harjinder Singh**, and J.M. Khurana. "Recyclable Zinc (II) ionic liquid catalyzed synthesis of azides by direct azidation of alcohols using trimethylsilylazide at room temperature." *Tetrahedron Letters.* (2017) **58 (25):** 2498-2502.
https://www.sciencedirect.com/science/article/pii/S0040403917306275

21. **Harjinder Singh**, Ashima Singh, and J.M. Khurana "A combined experimental and theoretical approach for structural, spectroscopic, NLO, NBO, thermal and photophysical studies of new fluorescent 5-amino-1-(7-chloroquinolin-4-yl)-1*H*-1,2,3-triazole-4-carbonitrile using density functional theory." *Journal of Molecular Structure***,** (2017) **1147:** 725-734.
https://www.sciencedirect.com/science/article/abs/pii/S0022286017309316

22. **Harjinder Singh**, M. Rajeshwari, and J.M. Khurana. "Synthesis, photophysical studies, and application of novel 2,7-bis(1-butyl-1*H*-1,2,3-triazol-4-yl)methoxy)naphthalene as a highly selective, reversible fluorescence chemosensor for detection Fe^{3+} ions"**.** *Journal of Photochemistry and Photobiology- A: Chemistry***.** (2018) **(353) :** 424–432**.**
https://www.sciencedirect.com/science/article/abs/pii/S1010603017314302
23. **Harjinder Singh**. "The mechanistic study of reaction between N-benzoyl carbamates and aliphatic/aromatic amines for synthesis of substituted N-benzoyl urea derivatives: A DFT approach". *Structural Chemistry***.** (2019) **30 (1):** 37-51
https://link.springer.com/article/10.1007/s11224-018-1171-8

24. Ashima Singh, **Harjinder Singh**, and J.M. Khurana "Computational study of new 1,2,3-triazole derivative of lithocholic acid: structural aspects, non-linear optical properties and molecular docking studies as potential PTP 1B enzyme inhibitor" *Computational Biology and Chemistry*. (2019). **78:**144-52**.** https://www.sciencedirect.com/science/article/abs/pii/S1476927118305188

25. **Harjinder Singh**. **"**A DFT approach for theoretical and experimental study of structure, electronic, Hirshfeld surface and spectroscopic properties of 2- of 12-(4-bromophenyl)-2-(prop-2-ynyloxy)-9,10-dihydro-8H-benzo[a]xanthen-11(12H)-on single crystal" *Chemical Physics.* (2019) **524 (1)**: 1-13. https://www.sciencedirect.com/science/article/abs/pii/S0301010418313636

Conference / Seminars

A) Paper presented:

1. **Harjinder Singh** and J.M. Khurana (2012) Synthesis of Substituted 1,2,3-Triazoles in Ionic Liquids [bmim]BF4 and bmim]OH" in the National Conference on New Frontier in Chemistry, held at Department of Chemistry, Kurukshetra University, Kurukshetra, India.

2. **Harjinder Singh** and J.M. Khurana (2012) 14th National Symposium in Chemistry (NSC-14) and 6th CRSI – RSC Symposium in Chemistry at National institute for interdisciplinary science and technology, Thirvananthapuram, India

3. **Harjinder Singh** and J.M. Khurana (2014) "Novel Green Approaches for Efficient Synthesis of Trisubstituted Triazoles" at 16th CRSI National Symposium in Chemistry held at IIT Bombay, India.

4. **Harjinder Singh** (2018) "Recyclable Zinc based ionic liquid catalyzed synthesis of azides at room temperature" at UGC sponsored 9th National Conference on Recent Advances in Chemical, Biological and Environmental Sciences held at M M Modi College, Patiala, India.

5. **Harjinder Singh** (2019) The mechanistic study of reaction between N-benzoyl carbamates and aliphatic/aromatic amines for synthesis of substituted N-benzoyl urea derivatives: A DFT approach" at UGC sponsored 10th National Conference on Recent Advances in Chemical, Biological and Environmental Sciences held at M M Modi College, Patiala, , India.

B) Attended

1. RC Paul Symposium in Chemistry 11th -14th Feb, 2011 at Department of Chemistry, Panjab University, Chandigarh.

2. 4th Science conclave:-A Congregation of Nobel laureates and eminent scientists organized at IIIT-A, Allahabad, 26th Nov-2nd Dec, 2011.

3. Training workshop on Green chemistry for tomorrow's world organized by Royal Chemical Society (north India section), 26th Dec, 2011 at University Guest House, University of Delhi, Delhi.

4. 4th Workshop on Bioinformatics and Molecular Modeling in Drug Design, held at Dr. B.R. Ambedkar Center for Biomedical Research (ACBR), University of Delhi during 18th -20th Jan, 2012.

5. 5th National Seminar in New Frontier in Chemistry, held at Punjabi University, Patiala, 15th -16th Feb 2013.

6. 20th ISCB International Conference on "Chemistry and Medicinal Plants in Translational Medicine for Healthcare" held at Department of Chemistry, University of Delhi, Delhi on 1st -4th March 2014.

Workshops and training courses

1. Attended UGC sponsored Seven Day Faculty Development Program on the theme of " Academic Writing From Critical Appreciation to Publication" held M M Modi College, Patiala from January 9-16, 2017.
2. Attended Seven Day Faculty Development Program on the theme of "Contemporary issues in Higher Education" held M M Modi College, Patiala from July 20-26, 2018.
3. Attended Faculty Development Program on the theme of "Emerging issues and challenges in Higher Education" held M M Modi College, Patiala from July 17th -22, 2019.