

Dr. TARUN KUMAR

Assistant Professor

Dept. of Chemistry, Mohanlal Sukhadia

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Research Interest

- Development of new synthetic methodologies for the single selective C-F bond activation in fluorinated compounds for the synthesis of new fluorinated building blocks
- Designing of new catalytic systems for diversified organic transformations and coupling reactions.

Education and Career

Degree	Institution	Year
M.Sc.	Department of Chemistry, University of Rajasthan, Jaipur, India	2008-2010
Ph.D.	Indian Institute of Technology Bombay, Mumbai, India (with Prof. I. N. N. Namboothiri)	2010-2016
Postdoctoral	CNRS-ICMR, Universite de Reims, Reims, France (with Dr. Florian Jaroschik)	2016-2018

Employment:

Assistant Professor	Department of Chemistry, Mohanlal Sukhadia University, Udaipur, India	2018-Present
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Research project (Ongoing)

1. SERB SURE research project entitled '**Exploring C-F Activation Chemistry of CF₃-dienes for the Green Synthesis of New Fluorinated Building Blocks**'.

Sanctioned Amount: **28,02,160** /- (INR twenty eight lakh two thousand one hundred and sixty only)

Duration: 3 years

Sanctioned date: 26.10.2023

Research project (Completed)

1. UGC-BSR Research Start-up Grant project title ‘**Strategic variation of Hauser – Kraus reaction: Synthesis of heterocycles, carbocycles, and polycyclic compounds**’

Sanctioned amount: **10,00,000** /- (INR ten lakhs only)

Duration: 2 years

Sanctioned date: 31.01.2020

Research Collaborations

1. Dr. Florian Jaroschik

Research Associate

CNRS (CR) D1 - Chimie et Matériaux Moléculaires 1919,

route de Mende 34090 Montpellier cedex 5

Institut Charles Gerhardt Montpellier France

2. Prof. I. N. N. Namboothiri

Department of Chemistry

Indian Institute of Technology Bombay

Mumbai, 400076, India.

Publications

1. Identification of Potent Antitubercular Secondary Metabolites from *Kigelia africana*: An In-Silico Investigation
B. D. Wadhvani, V. Nunia, K. Joshi, D. Mali, P. Vyas, **Tarun Kumar**, R. Nair, P. Khandelwal *ChemistrySelect* **2023**, 8, e202302269.
2. Visible Light-Mediated Reactions of β -Nitroalkenes
S. T. Sivanandan, M. J. Jesline, D. K. Nair, **Tarun Kumar** *Asian J. Org. Chem.* **2023**, 12, e202200555.
3. Tuning the regioselective functionalization of trifluoromethylated dienes via lanthanum-mediated single C-F bond activation
Tarun Kumar, Y. Yang, S. Sghaier, Y. Zaid, X. F. Le Goff, E. Rousset, F. Massicot, D. Harakat, A. Martinez, M. Taillefer, L. Maron, J.-L. Vasse, J.-B. Behr, and Florian Jaroschik *Chem. Eur. J.* **2021**, 27, 4016-4021.
4. Synthesis of Spiro- and Fused Heterocycles via (4+4) Annulation of Sulfonylphthalide with o-Hydroxystyrenyl Derivatives
A. Suresh, T. V. Baiju, **Tarun Kumar**, and I. N. N. Namboothiri, *J. Org. Chem.* **2019**, 84, 3158-3168.

5. Synthesis of Functionalized Arenopyrans and Arenylsulfanes via Reaction of Nitroallylic Acetates with Arenols and Arenethiols
P. Basu, R. Sikdar, **Tarun Kumar** and I. N. N. Namboothiri, *Eur. J. Org. Chem.* **2018**, 5735-5743.
6. Application of Elemental Lanthanides in the Selective C-F Activation of Trifluoromethylated Benzofulvenes Providing Access to Various Difluoroalkenes
Tarun Kumar, Amira Ben Hassine, Agathe Martinez, Dominique Harakat, Sylviane Chevreux, Fabien Massicot, Marc Taillefer, Jean-Bernard Behr, Jean-Luc Vasse, Florian Jaroschik *J. Vis. Exp.* **2018**, e57948, doi:10.3791/57948.
7. Generation of ϵ,ϵ -difluorinated metal-pentadienyl species through lanthanide-mediated C-F activation
Tarun Kumar, Fabien Massicot, Dominique Harakat, Sylviane Chevreux, Agathe Martinez, Klaudia Bordolinska, Preethanuj Preethalayam, Radhakrishnan Kokkuvayil Vasu, Jean-Bernard Behr, Jean-Luc Vasse, and Florian Jaroschik *Chem. Eur. J.* **2017**, 23, 16460.
8. Synthesis of Aminophenanthrenes and Benzoquinolines via Hauser–Kraus Annulation of Sulfonyl Phthalide with Rauhut–Currier Adducts of Nitroalkenes
Tarun Kumar, Vaijinath Mane and I. N. N. Namboothiri *Org. Lett.* **2017**, 19, 4283.
9. Review: α -Functionalization of nitroalkenes and its applications in organic synthesis
D. K. Nair, **Tarun Kumar** and I. N. N. Namboothiri *Synlett* **2016**, 27, 2425.
10. Hauser-Kraus Annulation of Phthalides with Nitroalkenes for the Synthesis of Fused and Spiro-heterocycles
Tarun Kumar, N. S. Satam and I. N. N. Namboothiri *Eur. J. Org. Chem.* **2016**, 3316. (Commentary by Victor Snieckus and M. A. Jalil Miah, *Synfacts* **2016**, 12, 1026.)
11. One-pot regioselective synthesis of functionalized and fused furans from Morita–Baylis–Hillman and Rauhut–Currier adducts of nitroalkenes
Vaijinath Mane, **Tarun Kumar**, Sourav Pradhan, Savita Katiyar and Irishi N. N. Namboothiri *RSC Adv.* **2015**, 5, 69990.
12. Imidazoles from nitroallylic acetates and α -bromonitroalkenes with amidines: synthesis and trypanocidal activity studies
E. Gopi, **Tarun Kumar**, Rubem F. S. Menna-Barreto, Wagner O. Valença, Eufrânio N. da Silva Júnior and Irishi N. N. Namboothiri *Org. Biomol. Chem.* **2015**, 13, 9862.

13. Synthesis of imidazoles via cascade reaction of nitroallylic acetates with amidines and studies on their trypanocidal activity
Tarun Kumar, Deepti Verma, Rubem F. S. Menna-Barreto, Wagner O. Valença, Eufrânio N. da Silva Júnior and Irishi N. N. Namboothiri *Org. Biomol. Chem.* **2015**, *13*, 1996.
14. Regiospecific synthesis of arenofurans via cascade reactions of arenols with Morita-Baylis-Hillman acetates of nitroalkenes and total synthesis of isoparvifuran
Tarun Kumar, S. M. Mobin and I. N. N. Namboothiri *Tetrahedron* **2013**, *69*, 4964.
15. Rauhut-Currier reaction of nitroalkenes with vinyl sulfones
R. Kumar, **Tarun Kumar**, S. M. Mobin and I. N. N. Namboothiri *J. Org. Chem.* **2013**, *78*, 5073.
16. Generation and trapping of a cage annulated vinylidenecarbene and approaches to its cycloalkyne isomer
Bichismitha Sahu, Guddeangadi N. Gururaja, **Tarun Kumar**, Anamitra Chatterjee, Bishwajit Ganguly, Shaikh M. Mobin and Irishi N. N. Namboothiri *J. Org. Chem.* **2012**, *77*, 6998.

Conferences/workshop/Invited Talks/Presentations

1. Delivered a talk on ‘Lanthanide-Mediated Selective C-F Activation in CF₃-dienes for the Synthesis of New Fluorinated Building Blocks’ at online International Conference 10th Asian Network for Natural & Unnatural Materials (ANNUM-10) held on 1st February, 2023 in the *School of Chemistry, UNSW, Sydney, Australia*.
2. Attended 2 days workshop on NMR operating and handling software held during 11-12, Oct 2023 organized by Department of Chemistry, *Mohanlal Sukhadia university, Udaipur*.
3. Presented research work (Topic: ‘Selective single C-F Activation in CF₃-dienes for the Synthesis of New Fluorinated Building Blocks’) at International Conference on EMERGING AREAS IN CHEMICAL SCIENCES held during 19-20th Nov, 2022 organized by *PAHER University, Udaipur*.
4. *Invited speaker* (Topic: ‘C-F activation involving lanthanides: new concepts and applications’) at one week online Short Term Training Programme (STTP) on

OrganicInorganic Hybrid Materials (OIHM-2021) held during 04-10-2021 to 08-10-2021 from 26th- 30th October-2020 organized by Applied Chemistry Department, **S. V. National Institute of Technology (SVNIT), Surat.**

5. *Oral presentation* in “International Virtual Conference on Frontiers in Chemical Sciences” (IVCFCS-2021) organized by **Department of Chemistry, MLSU, Udaipur, Rajasthan, India** on 25 June, 2021.
6. *Invited speaker* (Topic: ‘Synthetic Applications of Nitroalkenes and its Derivatives’) at short term training programme (STTP) on “Advanced Analytical Techniques in Chemistry (AATC-2020)” from 26th- 30th October-2020 organized by Applied Chemistry Department, **S. V. National Institute of Technology (SVNIT), Surat.**
7. *Oral presentation in International Conference on Nascent Developments in Chemical Sciences (NDCS-2015)* in **BITS Pilani, Rajasthan, India.** **Tarun Kumar** and I. N. N. Namboothiri.
8. *Oral presentation in X NOST for Research Scholars (JNOST-2014)* in **IIT Madras, India.** **Tarun Kumar** and I. N. N. Namboothiri.
9. *Oral presentation in 26th Research Scholars’ Meet-2014 (RSM-2014)* in **Mumbai, India.** **Tarun Kumar** and I. N. N. Namboothiri.
10. *Presented poster in 1st Alpine Winter Conference on Medicinal and Synthetic Chemistry 2018, St. Anton am Arlberg, Austria.* **Tarun Kumar** and Florian Jaroschik.
11. *Presented poster in national symposium on Transcending Frontiers in Organic Chemistry (TFOC-2014)* in **CSIR-NIIST Thiruvananthapuram, India.** **Tarun Kumar** and I. N. N. Namboothiri.
12. *Presented poster in 15th Tetrahedron Symposium 2014, Millennium Gloucester, Kensington, London, UK.* **Tarun Kumar**, Deepti Verma and I. N. N. Namboothiri.
13. *Presented poster in 3rd international conference on “Heterocyclic Chemistry” 2011, University of Rajasthan, Jaipur, India.* **Tarun Kumar** and I. N. N. Namboothiri.
14. *Presented poster in In-House Symposium 2012, IIT Bombay, Mumbai.* **Tarun Kumar** and I. N. N. Namboothiri.