

Research

Department of Chemistry of D.G. Ruparel College has Mumbai University recognized research centre for Ph.D. and M.Sc. by research in Chemistry

- **Dr. Krishnakant T.Waghmode**

M.Sc. Ph.D., SET., GATE, Organic Chemistry

Professor and Research Guide for Ph.D. and M. Sc.by research in Chemistry

Area of research interest:

- Heterocyclic Chemistry
- Green Chemical Methodologies
- Catalysis, Phase Transfer Catalysis, Triphase catalysis
- Microwave-assisted organic reactions
- Multistep organic Synthesis And newer methods in organic synthesis

- **Research publications:**

1. An Efficient Straightforward Synthesis Of Antidepressant Drug Moclobemide, Santoshkumar M. Potdar And Krishnakant T. Waghmode, Asian Journal Of Medicinal And Organic Chemistry(AJOMC), Santoshkumar M. Potdar And **Krishnakant T. Waghmode**, Vol. 5, No. 5 (2020), 174-178.
2. New Strategy For Synthesis Of Anticancer Active Piperastrol, Enastron Using Ammonium Sulfo cyanate, Santoshkumar M. Potdar* A, Aishwarya R. Deshmukh, **Krishnakant T. Waghmode**, *Letters In Organic Chemistry*, 2021, 18, 1-4
3. New 3-(2-(2-Phenyl-1H-Benzo [D] Imidazol-1-yl) Acetyl)-2H-Chromen-2-One Analogues as Potential Antimicrobial Agents, Shailesh S. Gurav* And **Krishnakant T. Waghmode**, World Journal Of Pharmaceutical Research, Volume 9, Issue 13, 864-875.
4. Synthesis And Antibacterial Study Of Thiadiazole Substituted Benzimidazole Derivatives, World Journal Of Pharmaceutical Research, **Krishnakant T. Waghmode**, Vishal Jadhav And Bandoba T. Nikam, World Journal Of Pharmaceutical Research, Volume 10, Issue 3, 1572-1578.
5. Green Synthesis Of Pharmacologically Active Piperazine Substituted Schiff Bases And Their Antimicrobial Activities, **Krishnakant T Waghmode*** And Bandoba T. Nikam, Der Pharma Chemica, 2021, 13(2): 71-35
6. Efficient And Facile Synthesis Of Benzimidazole Induced Schiff Bases And Their Potent Antibacterial Activity And Computational Study, Shailesh S. Gurav, **Krishnakant T. Waghmode**, And Bandoba T. Nikam, *Asian Journal Of Chemistry*; Vol. 33, No. 6 (2021), 1261-1266,,

7. Trans-Esterification with Homogeneous Acid Catalyst -Linear Alkyl Benzene Sulfonic Acid for Biodiesel Production, **Krishnakant T. Waghmode*** and Uday M.Ratnaparkhi., International Journal of Science and Research (IJSR), Volume 8 Issue 4, April 2019, 662-668, ISSN: 2319-7064.
8. Repurposing n-butyl stannic acid as highly efficient catalyst for direct amidation of carboxylic acids with amines, Santoshkumar M. Potadar , Anil S. Mali, **Krishnakant T. Waghmode¹** , Ganesh U. Chaturbhuj, *Tetrahedron Letters*, 2018,59 4582–4586,
9. Synthesis, Characterization and Antibacterial Activity of Ferrocene Derivatives, **Krishnakant T. Waghmode**, IOSR Journal of Applied Chemistry (IOSR-JAC),2 018,2278-5736.Volume 11, Issue 12 Ver. I (December. 2018), PP 62-65.
10. Microwave Promoted Synthesis of Pharmacologically Active Pyrazolidinonyl Derivatives of Benzothiazoles. **Krishnakant T. Waghmode*** and Prachi K. Shinde, Der PharmaChemica,2017, 9(22):47-49, ISSN 0975-413X CODEN (USA): PCHHAX
11. Esterification of stearic acid for biodiesel production in the presence of homogeneous milder organic acid as a catalyst.,**KrishnakantT.Waghmode*** and UdayM.Ratnaparkhi., Journal of Chemical and Pharmaceutical Research, 2015, 7(8):469-473, ISSN : 0975-7384 CODEN(USA) : JCPRC5, Peer reviewed with impact factor 0.75
12. Synthesis and Antibacterial activity of 2-aminobenzimidazole derivatives.,**Krishnakant T. Waghmode*** and Prachi K. Shinde, IOSR Journal of Applied Chemistry (IOSR-JAC)2278-5736.Volume 10, Issue 7 Ver. III (July. 2017), PP 86-89., e-ISSN:2278-5736
13. Synthesis, Characterization and Antibacterial Activity of Substituted Benzothiazole Derivatives, **Krishnakant T. Waghmode*** and Prachi K. Shinde, International Journal of Scientific and Research Publications, Volume 7, Issue 8, August 2017., ISSN 2250-3153.
14. Microwave assisted Synthesis of 3,4-dihydropyrimidin-2(1H)-thione derivatives of thiadiazole., **Krishnakant T. Waghmode*** and Pradip D. Parmar, IOSR Journal of Applied Chemistry (IOSR-JAC) Volume 10, Issue 9 Ver. I (September. 2017), 58-60, e-ISSN: 2278-5736
15. Synthesis, Characterization And Antibacterial Study Of Thiadiazole Derivatives, **Krishnakant T. Waghmode¹**and Vishal U. Jadhav¹,Int J Pharma Bio Sci 2017 October; 8(4): (P) 120-124 , ISSN 0975-6299
16. Microwave Promoted Solvent -Free Beginelli Reaction for one Pot Synthesis of Dihydropyrimidin-2-(1H)-ones catalyzed by sulfamic acid., **KrishnakantT.Waghmode**, Dileep Khandekar, Nandini R. Pai., Asian Journal of Chemistry, Vol. 23, No. 12 (2011), 5217-5219

17. Microwave promoted synthesis of pharmacologically active Schiff bases of indolo [2, 3-*b*] quinoxaline., Nandini R. Pai*, and **Krishnakant. T. Waghmode**, Der PharmaChemica, 4 (2):622-625., 2012, ISSN 0975-413X CODEN (USA): PCHHAX.
18. Comparative study of O-butylation of phenols under biphasic versus triphasic condition by using tetrabutyl ammonium hydrogen sulphate as Phase transfer catalyst, Nandini R. Pai*, **Krishnakant. T. Waghmode**, Ganesh. S. Pathre ,Elixir Org. Chem, 45 (2012) 7890-7892. ISSN :2229-712X
19. Microwave assisted synthesis of Pharmacologically active N-phenyl acetamide derivatives of indolo [2, 3-*b*] quinoxaline, Nandini R. Pai* and **Krishnakant T. Waghmode**, International Journal of Pharmacy(IOSRPHR) ,Vol.2, Issue 1, 2012, pp.102-105., ISSN: 2250-3013
20. S-Alkylation of thiophenol under biphasic versus triphasic PTC condition using Tetrabutyl Ammonium Bromide as a Phase Transfer Catalyst, Nandini R. Pai* and **Krishnakant T. Waghmode**, Journal of Chemical and Pharmaceutical Research, 2012, 4(3):1589-1591., ISSN : 0975-7384 CODEN(USA) : JCPRC5.
21. Conventional and Greener approach for the synthesis of some pharmacologically active derivatives substituted with thiazolidines substituted with Indolo[2,3-*b*]quinoxaline., **Krishnakant T. Waghmode**, Journal of Chemical and Pharmaceutical Research,2014,6(5),1101-1105, ISSN : 0975-7384 CODEN(USA) : JCPRC5

● **Research Papers Presented:**

1. A research paper entitle “Synthesis of Indolo-quinoxaline derivatives and their biological behavior” was presented in the International Congress of Chemistry and Environment (ICCE-2009) held at Ubonratchathani, Thailand from 21st to 23rd January 2010.
2. Presented Research paper entitled “Microwave promoted synthesis of biologically active compounds” in the Research Scholar Meet organized by Indian Chemical Society and SIES College Mumbai on 17th and 18th February 2012.
3. Research poster entitled “Synthesis of *N*-[phenyl (phenyldiazenyl) methylene] Isonicotinohydrazides derivative its Chromatographic separation, characterization by spectroscopic methods and study of its biological behaviour” was presented in CONCHEM-2014: National conference entitled Societal impact of Chemistry vision 2020 organized by Department of Chemistry D.G.Ruparel College, Mumbai, India on 12th and 13th September 2014.

4. Presented Research poster entitled "Microwave-Assisted Rapid, Efficient and Facile Synthesis of Some Substituted Pyrazole Derivatives and their spectral Characterization" was presented in the National Conference on "Green Technologies in Day-to-Day Life" (NGT 2017) on Saturday, Feb.18, 2017, at Gurunanak College Mumbai.
5. Presented Research poster entitled "Microwave Promoted One-Pot Multicomponent Synthesis of Dihydropyrimidin-2-(1H)-ones and Thiones." In National Conference on Modern research trends in Chemistry and Allied Sciences (NCMRTC-2017) on Saturday, Feb.25, 2017 at JSM College Alibag.
6. Presented Research poster entitled "Facile One-Pot Multicomponent Biginelli Reaction for the Synthesis of Dihydropyrimidinones and Thiones" in the National conference entitled Emerging trends in Science on Saturday, March04, 2017 at Acharya College Mumbai.
7. Presented Research poster entitled "Synthesis and characterization of some *N*-{(1)-substituted phenyl [phenyldiazenyl] methylene} isonicotinohydrazone derivatives" in the National conference entitled Emerging trends in material Sciences(ETIMS) sponsored by Board of Nuclear Science (BINS) on Saturday, January 13, 2018, at V.G.Vaze College, Mulund, Mumbai.
8. National Conference -Synthesis Characterization and antibacterial activity of some coumarin induced benzimidazole derivatives, Wilson College Mumbai and University of Mumbai, Oral Presentation on 01.02.2020.
9. National Conference entitled Advances in Chemical Sciences and Sustainable Development (ACSSD-2021), 3-(2-(2-alkyl-1H-benzo[d]imidazol-1-yl) acetyl)-2H-chromen-2-one derivatives as Potential Antimicrobial Agents, B.N. Bhandodkar College of Science, Thane on 6th March 2021
10. International Conference on Fundamental and Applied Sciences (ICFAS2021), Paper presented on 4th March 2021 to 26th March 2021 at Bhartiya Vidya Bhavan's Hazarimal Somani College Mumbai, Practical, Eco-friendly Synthesis of 3-(2-(2-Phenyl-1H-benzo[d]imidazol-1-yl) acetyl)-2Hchromen-2-one Derivatives and their Computational and Antibacterial Screening

● **Research Projects**

1. **Mumbai University Minor Research Project:** 2020-21

Amount:30000/-

Ref No. AAMS/ICD/106 of 2021, 23d July, 2021.

Title: "Synthesis, characterization & biological studies of analogues of [1,2,4] triazolo [3,4-*b*] [1,3,4] thiadiazole analogues"

2. 23d July, 2021 **UGC minor research project:** For two years 2017-18,2018-19

Sanctioned amount: 1,80000/-

UGC approval Letter: No.F.47-1199/14(General/7WRO)XII Plan

No. and Date: Date 29 June 2017

Title of the Research Project: "Synthesis of N²-(1)-substituted phenyl [phenyldiazenyl]methylene} isonicotinohydrazides and 4-[5-(alkyl thio)-1,3,4-oxadiazol-2-yl] pyridine compounds their Chromatographic separation, characterization by spectroscopic methods and study of their biological behavior"

3. **Mumbai University Minor Research Project:** 2016-17

Amount:30000/-

317/- Ref No. APD/237/429 of 2017, dated 16th January 2017.

Title: Synthesis, characterization & biological studies of N-[O-acetoxyalkalidene]isonicotinohydrazide analogues of carbohydrates.

4. **Mumbai University Minor Research Project:** 2006-07

Amount 20000/-

Minor research project ref No.APD/23724 of 2007 dated 14 January 2007, Research project No.94.

Title: Green Chemical processes intensification of reaction rates and Selectivities

• **Dr. Vaishali H. Rajurkar**

M.Sc., B.Ed., Ph.D. Inorganic Chemistry

Research Guide for M.Sc. by Research

Area of Interest in Research:

- Material Sciences
- Solid State Chemistry

Research Publications in National & International Journals:

1. "Synthesis, Characterization And Antimicrobial Activity Of New Cobalt (II), Nickel (II) and Copper (II) Complexes with 2-(2-hydroxy-1, 2-diphenylethylideneamino) benzoic acid" published in 'Inorganic Chemistry Communications' Volume 14, Issue 5,(2011), Pages 618-621.

2. "Synthesis Spectral Characterization and Biological Studies of Cr (III), Mn (II) AND Fe(II) Complexes with Diacetylmonoxime" published in 'Oriental Journal of Chemistry', Volume.26, no. 2, (2010) pages 573-580.
3. "Synthesis, Spectral and Biological Studies of New Mn(II)and Fe(II) Complexes of 2,3-Butanedione 3-monoxime",V. H. RAJURKAR 'Oriental Journal of Chemistry', 2014,Vol. 30 No.-4, Pages-1847-1854. ISSN: 0970-020 X.
4. "Synthesis, Spectral and Biological Studies of New Mn(II)and Fe(II) Complexes of 2,3-Butanedione 3-monoxime",V. H. RAJURKAR 'Oriental Journal of Chemistry',Jan.2015, Vol. 31 No.-4, Pages-561-567. ISSN: 0970-020 X(print), 221-5039(Online).
5. "Synthesis And Characterization Of Non-Alcoholic Hand Washer By Using NaturalHerbs", published in International Journal of Scientific Research, vol. 05, issue 04April 2016, ISSN No. 2277-8179, Index Copernicus (IC) value-69.48.
6. "A research paper titled, 'Biosynthesis and XRD Analysis Of Zinc Nanoparticles",published in Indian Journal of Applied Research, vol. 07, issue 07 April 2016, ISSNNo. 2249-555X, Index Copernicus (IC) value-79.96

Research Papers Published in National / International Seminars / Workshops:

1. Poster presentation entitled as "Synthesis And Characterization Of Solid State Cr(III)Mn(II) And Fe(II) Complexes Of Diacetylmonoxime in the National Seminar on"Advanced Synthetic Methodologies and Functional Materials" (ASMFM) heldon 23rd- 24th December, 2009 by Department of Chemistry, Shivaji University,Kolhapur, 416004, Kolhapur.
2. Paper presentation entitled as "Quantisation of silver from hyposolution by AtomicAbsorption spectroscopy" in the National Seminar on "Latest Technologies &Their Applications in Forensic Science and Digital Forensics" held on 6-7th March2012 by Institute of Forensic Science, Mumbai, 400032.
3. Poster presentation in U.G.C. (W.R.O. Pune) & C.S.I.R., New Delhi Sponsored twoday National Seminar on "Recent Trends In Thin Flim Technology", (14--15thNov.2008), Walchand College Of Arts And Science, Solapur.
4. Poster presentation in U.G.C. (W.R.O. Pune) & C.S.I.R., New Delhi Sponsored twoday National Conference CONCHEM on "Societal impact of chemistry vision-2020" (12--13th Sept. 2014), D. G. Ruparel College of Arts, Science and commerce,Mumbai.

5. Presented and published a research paper in International Multidisciplinary conference at Sonubai Baswant College, Shahapur, entitled "Synthesis, characterization and biological studies of Mn (II) complexes with 2,3-butanedione 3-monoxime and 3/4 hydroxyphenyl"

6. Presented a research paper entitled, "Synthesis, characterization and biological activities of Mn(II) and Fe(II) complexes of 2,3-butanediomonoxime", in National Conference, 'Recent Trends in Material Sciences on 13th Jan 2018 conducted by Vaze College, Mulund.

7. Presented a paper entitled, "Textile Industry and Market Growth in India", in National Conference on 'Paridhan' organised by History Department, D. G. Ruparel College of Arts, Science and Commerce on 28th Sept 2018.

Research Projects Completed:

1. Completed one Minor Research Project of University of Mumbai entitled, 'Biosynthesis, Characterization and Biological activity of Zinc Oxide Nanoparticles Using Root Extract of Zingiber Officinale' in the year 2016-17.

2. Completed one Minor Research Project of R'Quest, D.G. Ruparel College, entitled, 'Synthesis, characterization and biological activity of Zinc Oxide (ZnO) Nanoparticles', in the year 2016-17.

3. Completed two small projects under 'Avishkar', a University Research Convention, One of the research project is selected in State level.