

Nishikant Satam

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PROFESSIONAL EXPERIENCE

Post-Doctoral Teaching Fellow (William Paterson University)

2023-Present

2023-Present

- Conducted a teaching course focused on my expertise in organic chemistry for undergraduate students.
- I took on the challenge of merging an upper-level undergraduate course with Organic Material chemistry for graduate students in collaboration with Dr. David Snyder.
- Currently, I am at the helm of a dynamic research program, collaborating with talented WPU undergraduates. The goal is to explore and implement modern organic synthesis tools, specifically leveraging photocatalysis and electrochemistry, to transform chemicals and synthesize biologically relevant small molecules.

Post-Doctoral Researcher in Organic Chemistry/Carbohydrate – Medicinal Chemistry

Adviser: Prof George O'Doherty/ Northeastern University

2019 –2023

- Developed de novo synthetic routes for synthesis of aminoglycosides natural products.
- Multi-step synthesis of organic and bioactive molecules such as forsamine and purpuospmaine.
- Worked on NIH funded project with Harvard Medical School to synthesis amino oligosaccharides for SAR studies against multi-drug resistant bacteria.
- Evaluation of the oximes and α -D-/ α -L-Rhamnosyl and Amicetosyl Digitoxigenin-oxime for anti-cancer properties in collaboration with Federal University of São João del Rei, Minas Gerais, Brazil.

Ph. D in Organic Chemistry/Synthetic Methodology– Medicinal Chemistry

Adviser: Prof Irishi. N. N. Namboothiri, IIT, Bombay

2012–2019

- Organocatalyzed conjugate addition of α -nitrocarboxylates to enones for the enantioselective synthesis of quaternary α -amino acid precursors for peptide studies.
- Worked on DST funded project enantioselective quaternary amino acid via conjugate addition of nitrocarboxylates to vinyl sulfones.
- Conjugate addition of bromoform to electron deficient alkenes: Cyclic dibenzylideneketones and *p*-quinone methides (PQMs) for synthesis of halogenated and hetero aromatic compounds.
- Developed strategies towards potent trypanocidal drugs by synthesizing library of quinone derivatives by employing unique strategy.
- Synthesis of anti-bacterial and anti-inflammatory xanthenes and indanediones derivatives *via* reaction of 3-sulfonylphthalide with arones.
- Regioselective synthesis of alkylidene phthalides via cascade Michael addition-hemi-ketalation and fragmentation of 3-aryolphthalides with *o*-hydroxynitroalkenes.

Master of Science (Organic Chemistry), Pune University, India

2012–2019

- Summer Research Project “Magnesium mediated bromoform addition to α - β unsaturated carbonyl compounds and imines”.
- Synthesis and Functionalisation of ferrocene derivatives for catalysis.

INDUSTRIAL EXPERINCE

Research Chemist, R.G. Spechem, Mumbai, India

2007–2010

- Process research and development to synthesis and polymer material from mg to kilo scale
 - Worked for optimising the scale up operation
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EDUCATION

Northeastern University

2019-2023

Post-Doctoral Research Associate
Boston
Advisor: Prof George O'Doherty

Indian Institute of Technology-Bombay, India

2012–2019

Ph. D in Organic Chemistry/Synthetic Methodology– Medicinal Chemistry

Advisor: Prof Irishi. N. N. Namboothiri

Dissertation: “Synthesis of carbocycles, heterocycles and organobromine compounds via addition of 3- substituted phthalides and bromoform to electron deficient alkenes”

Pune University, India

2010–2012

Master of Science (Organic Chemistry)

Mumbai University, India

2004–2007

Bachelor of Science (Chemistry),

TEACHING EXPERIENCE AT WILLIAM PATERSON UNIVERSITY

Teaching in Summer-I 2024: My responsibilities included class and evaluation of quizzes and examination papers.

- **Organic Chemistry II (CHEM-2580) – Summer-I 2024** (William Paterson University)
Developed lecture material and taught a course on the basics of organic chemistry I. Utilized multiple pedagogical modalities, including peer instruction and incorporation of biochemistry and cell biology processes. Taught lecture sections only.

Teaching in Spring 2024: My responsibilities included classes, laboratory work, evaluation of quiz and examination papers, and a seminar project for the course.

- **Organic Chemistry II (CHEM-2580) – Spring 2024** (William Paterson University)
Developed lecture and laboratory material and taught organic chemistry I and general chemistry I and II courses. Utilized multiple pedagogical modalities, including peer instruction, by employing many models for better understanding and relevance to biological systems. Taught two lecture sections and one laboratory section.

Teaching in Fall 2023: My responsibilities included classes, laboratory work, evaluation of quiz and examination papers, and a seminar project for the course.

- **Organic Chemistry I (CHEM-2570) – Fall 2023** (William Paterson University)
Developed lecture and laboratory material and taught a course on the basics of organic chemistry. Utilized multiple pedagogical modalities, including peer instruction, by employing many models for better understanding and relevance to biological systems. Taught two lecture sections and one laboratory section.
- **Medicinal Chemistry (CHEM-4440) – Fall 2023** (William Paterson University)
Developed lecture material and inquiry-driven pedagogical course to introduce upper-level undergraduates to medicinal chemistry which emphasis importance and brushing the organic chemistry concept. o-taught two lecture sections with Dr. Snyder.
- **Polymer Chemistry (CHEM-6002) – Fall 2023** (William Paterson University)
Developed lecture and laboratory material and taught course on basic of organic chemistry. Utilized modalities including peer instruction by employing lot of modern relevant methods for better understanding as well as applications in drug-delivery systems. Co-taught two lecture section with Dr. Snyder and one laboratory section.

STUDENT MENTORED AT WILLIAM PATERSON UNIVERSITY

- Juan Rodrigues:- WPU, Material Chemistry, Masters
- Busola Owalabi:- WPU, Junior Medicinal Biochemistry, Major
- Nurzat Ristovski:- WPU, Junior Medicinal Biochemistry, Major
- Preethi Devarapalli:- Junior Medicinal Biochemistry, Major
- Tatiana Yascaribay:- Senior Sports Medicine
- Zeynep Fatima :- Sophomore Chemistry, Major

STUDENT MENTORED PRIOR TO WPU

- Mentored Ian Hicks (graduate at Northeastern University) worked on De nova s-SAR synthesis of Aspergillide C natural product.
- Mentored Soumyaranjan Pati (graduate at IIT-Bombay) worked on Synthesis of fluorescence active nitro chromene and diaryl quinone compounds as probe for radiology studies.
- Mentored Vinicus Cristani (graduate student at UFMG Brazil) on Synthesis of substituted quinones and their evaluation against Trypanosoma cruzi bacteria for Chagas disease.
- Mentored thesis of master student Saumyadip Nemu at IIT-Bombay on “Conjugate Addition of Bromoform to Electron Deficient Alkenes: Nitrodienes, Dibenzylideneacetones and 3-Oxindole and Synthesize of Furan via Clock-Wilson rearrangement of Bromoform adducts
- Mentored more than 6 under-graduate students

AWARDS AND FELLOWSHIP

- **Best Poster Award** International Symposium on Nascent Developments in Chemical Science (NDCS-2015) held in BITS, Rajasthan, India
- **Best Poster Award** National Symposium on Emerging Trends in Chirality, Medicinal Chemistry and Perfumery (ETCMP-15) held in, Mumbai, India
- All India Rank **68** (UGC-NET) qualified for Fellowship in India

OUTREACH and SERVICE

- Editorial Board, American Journal of Heterocyclic Chemistry. (2022–),
- Current Indian Science-Organic Chemistry. (2020–)
- Member, American Chemical Society. (2022–)
- Reviewer for Journal of Heterocyclic Chemistry (Wiley Publishing House).
- Reviewer for Journal of Organic Chemistry (ACS). (2022–)

PUBLICATIONS

- [1] Kumar, D.; **Satam, N.**; Namboothiri, I. N. N. “Magnesium-Mediated Regioselective Additions of Bromoform to Quinone Methides and Aurone-Derived Azadienes” Synth. **2024** (doi.org/10.1055/a-2353-1722).
- [2] Basu, P.; **Satam, N.**; Pati, S.; Suresh, A.; Namboothiri, I. N. N. “Reactivity of Sulfonylphthalide with Diverse Activated Imines for the Synthesis of Enaminophthalides, Spiro-isoquinolinones and Homali-cine Natural Products” J. Org. Chem. **2023**, 88, 7, 4038.
- [3] **Satam, N. S.**; Basu, P.; Pati, S.; Namboothiri, I. N. N. “Michael Addition-Elimination and [4+1] Annulation of Sulfonylphthalide with Hydroxychalcones for the Synthesis of Alkylidenephthalides and Indanediones” Eur. J. Org. Chem. **2021**, 3472.
- [4] **Satam, N. S.**; Nemu, S.; Gururaja, G. N.; Namboothiri, I. N. N. “Conjugate Addition of Bromoform to Electron Deficient Alkenes: Nitrodienes, Dibenzylideneacetones and 3-Oxindole and Synthesize of Furan via Clock-Wilson rearrangement of Bromoform adducts” Org. Biomol. Chem. **2020**, 18, 5697.
- [5] Wood, J.M.; **Satam, N. S.**; Almeida, R.G.; Cristani, V.S.; Lima, D.P.; Pereira, L.D.; Salomão, K.; Menna-Barreto, R.F.S.; Namboothiri, I.N.N. “Strategies Towards Potent Trypanocidal Drugs: Application of Rh-catalyzed [2+2+2] Cycloadditions, Sulfonyl Phthalide Annulation and Nitroalkene Reactions for the Synthesis of Substituted Quinones and their Evaluation against Trypanosoma cruzi” Bioorg. Med. Chem. **2020**, 28, 115565.

- [6] Basu, P.; **Satam, N. S.**; Namboothiri, I. N. N. "Synthesis of Diverse Oxygen Heterocycles via Hauser-Kraus Annulation involving 1,6-Addition of Phthalide to Quinone Methides" *Org. Biomol. Chem.* **2020**, 18, 5677.
- [7] Bera, K.; Ayyagari, N.; **Satam, N. S.**; Namboothiri, I. N. N. "Steroselective Synthesis of 2-Hydrazinated-2,3-dihydrofurans via Cascade Michael Addition-Substitution Sequence Involving the Reaction of Curcumin and other β -Dicarbonyls and α -Hydrazinated Nitroalkenes" *Org. Biomol. Chem.* **2020**, 18, 140.
- [8] Midya, S. P.; Gopi, E.; **Satam, N. S.**; Namboothiri, I. N. N. "Synthesis of Fused Cyanopyrroles and Spirocyclopropanes *via* Addition of *N*-ylides to Chalconimines" *Org. Biomol. Chem.* **2017**, 12, 6425.
- [9] Bera, K.; **Satam, N. S.**; Namboothiri, I. N. N. "Enantioselective Synthesis of Quaternary α -Amino Acids via L-tert-Leucine-Derived Squaramide Catalyzed Conjugate Addition of α -Nitrocarboxylates to Enones" *J. Org. Chem.* **2016**, 81, 5670.
- [10] Kumar, T; **Satam, N. S.**; Namboothiri, I. N. N. "Hauser-Kraus Annulation of Phthalides with Nitroalkenes for the Synthesis of Fused and Spiro-heterocycles" *Eur. J. Org. Chem.* **2016**, 3316.
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PRESENTATIONS

- [1] B. Owalabi, J. Rodrigues and **N. Satam**, "Electrochemistry induced stereospecific benzylic oxidation to synthesis d-Hydroxyalkynones at Mid Atlantic Regional Meeting, June 5-8, 2024, ACS Conference, Penn State, P.A., US.
- [2] **N. Satam**, L. Chao, and G. O'Doherty. "Denova asymmetric synthesis of diverse array of 2-aminosugars". **Lecture** at Boston Symposium of Organic and Bioorganic Chemistry, Oct 5-6, 2020, Virtual Conference, Boston, M.A., US.
- [3] **N. Satam**, L. Chao, and G. O'Doherty. "Denova asymmetric synthesis of diverse array of 2-aminosugars". **Lecture** at Boston Symposium of Organic and Bioorganic Chemistry, Oct 5-6, 2020, Virtual Conference, Boston, M.A., US.
- [4] **N. Satam**, and I. N. N. Namboothiri "Synthesis of Alkylidene Phthalides and Indanediones Via Addition of 3-Sulfonyl Phthalide with Chalcones" **Poster Presentation** at 18th Tetrahedron Symposium, 27-30 June 2017, Budapest, Hungary.
- [5] **N. Satam**, and I. N. N. Namboothiri "Enantioselective Synthesis of Quaternary α -Aminophosphonates and Enantioselective Synthesis of Quaternary α -Amino Acids via L-tert-Leucine-derived Squaramide Catalyzed Conjugate Addition of α -Nitrocarboxylates to Enones, **Lecture** at In-house Symposium, April, 02, 2016, Department of Chemistry, Indian Institute of Technology, Bombay, India.
- [6] **N. Satam**, and I. N. N. Namboothiri "Organocatalyzed Conjugate Addition of α -Nitrocarboxylates to Vinyl Sulfones for the Enantioselective Synthesis of Quaternary α -Amino Acid Precursors" **Poster** at the International Symposium on Nascent Developments in Chemical Science (NDCS-2015), October 16, 2015, BITS, Pilani, Rajasthan, India.