

## CURRICULUM VITAE

Dr. Santosh Kumar Nanda  
Assistant Professor  
Department of Chemistry  
Govt. Autonomous College, Bhadrak  
Fakir Mohan University  
India, Odisha, 756100, Mob: +91-9769575411  
Email: san00chem@gmail.com, sknandaind@gmail.com  
Date of Birth: 03<sup>rd</sup> July 1987 Researcher ID: ADM-5968-2022  
ORCID: <https://orcid.org/0000-0002-6304-492X>, Google Scholar: [https://scholar.google.com/citations?user=cJ4e05\\_sAAAAAJ&hl=en](https://scholar.google.com/citations?user=cJ4e05_sAAAAAJ&hl=en)



### SYNOPSIS:

- A competent professional with more than **10 years** of experience in organic synthesis.
- Strong understanding of basic organic chemistry and reaction mechanism, synthesis of heterocyclic compounds, bioactive small molecules and natural products.
- Keen interest in the development of new synthetic methodologies via photocatalysis and organocatalysis through literature survey, scientific journals and patent search, ability to understand new product and its development.

### EDUCATION:

Si No	Degree	Year	Subject	University/Institution
1	10 <sup>th</sup> (BSE)	2002	Odia, English, Sanskrit, Science, Mathematics, History, Geography	BSE, Odisha
2	+2 (CHSE)	2004	Odia, English, Physics, Chemistry, Mathematics, Botany, Zoology	CHSE, Odisha
3	+3 (B. Sc./Degree)	2007	Hons- Chemistry, Pass- Physics, Elective- Mathematics	Utkal University Vani Vihar
4	M. Sc.	2010	Chemistry	Utkal University Vani Vihar
5	Ph.D.	2018	Organic Synthesis	Indian Institute of Technology, Bombay (IIT-Bombay)

**Ph.D. thesis title:** Lewis acid Mediated Reactions for the Synthesis of 4-Alkoxy Quinolines, Cyclic Ether-Fused Chromenes and 1,4-Heterocycles.

**Guide's Name:** Prof. Santosh J. Gharpure  
**Institute:** Indian Institute of Technology, Bombay (IIT-Bombay)  
**Year of Award:** 2018 (Sai life-Best Thesis award by NOST-Indi).

### EXPERIENCES (CHRONOLOGICAL ORDER):

Si. No.	Positions held	Name of the Institute	From	To	Pay Scale
1	SRF	Dept. of Chemistry,	09/07/2018	19/12/2018	28000+HRA
2	Project Research Scientist	Dept. of Chemistry, IIT Bombay	15/01/2019	28/12/2019	50000+HRA
3	Assistant Professor	Centurion University, BBSR, Odisha	07/12/2020	21/03/2022	67000 (Gross)
4	Post-Doctoral associate	Texas University, USA	25/10/2021	09/03/2022	1.98 lakhs
5	Senior Research Investigator (Team Lead)	Bristol Mayer Squibb, Syngene, Bangalore	04/04/2022	22/09/2023	14 lakhs/annum

### AWARDS AND ACHIEVEMENTS:

- **SaiLife-NOST Best Thesis Award**, National Organic Symposium Trust (NOST) Council, India (2019).
- **Secured 5<sup>th</sup>** position (overall) and **1<sup>st</sup>** position (in Organic Chemistry) in the M.Sc. exam (2010)
- Qualified Graduate Aptitude Test in Engineering (GATE-2014, **All India Rank-299**)
- Qualified National Eligibility Test (NET) *twice* in Chemical Sciences: CSIR-JRF, India (December 2011, **All India Rank-131** and December 2013, **All India Rank-32**).
- **Secured 2<sup>nd</sup>** position in the B.Sc. exam (2007)
- Postdoctoral Research Associate fellowship from UTSA, Texas, USA (2021)
- Postdoctoral Research Associate fellowship from IIT-Bombay, India (2020)
- Senior Research Fellowship (SRF) from Council of Scientific and Industrial Research, India (2013–2016)
- Junior Research Fellowship (JRF) from Council of Scientific and Industrial Research, India (2011–2013)

### PUBLICATIONS:

1. P. Barik, S. S. Behera, L. K. Nayak, L. N. Nanda, **Santosh K. Nanda \*** and P. Patri, "Transition metal catalysed cascade C–C and C–O bond forming events of alkynes" *Org. Biomol. Chem.*, 2024, Advance Article, Link- <https://doi.org/10.1039/D3OB02044D>

2. P. Barik, S. S. Behera, **Santosh K. Nanda\***, “Electron Donor-Acceptor (EDA) Complex Enabled C–C Cross-Coupling Reactions of  $\alpha$ -Amino Radicals” *Asian J. Org. Chem*, 2024, *Advanced article*, Link- <https://doi.org/10.1002/ajoc.202400089>
3. **Santosh K. Nanda\***, L. N. Nanda, J. Pal, Santosh J. Gharpure\*, “New Avenues for the Synthesis of Oxa-Cycles Using Lewis/Brønsted Acid Mediated Carboxygenation and Carboalkoxylation of Alkynes” *Eur. J. Org. Chem.* 2024, *ASAP*, 27, Link- <https://doi.org/10.1002/ejoc.202400104>
4. **Santosh K Nanda\***, Asymmetric Cascades of Pi-allyl complex: A Journey from Transition-Metal catalysis to Metallaphotocatalysis, *Chem. Commun.*, 2023,59, 11298-11319, Link- <https://doi.org/10.1039/D3CC03010E>.
5. **Santosh K. Nanda\***, Catalytic Radical-Polar Crossover Non-Classical Semipinacol Rearrangements: The Sustainable Approach, *Adv. Synth.Catal.* 2023,365, 834-853. Link- <https://doi.org/10.1002/adsc.202201338>.
6. **Santosh K. Nanda\***, Nagaraju Y. Sakani, “A Review on the Synthesis and Applications of  $\alpha$ -Alkylidene Succinimides, *Asian J. Org. Chem*, 2022, 11, 4, e202200041. Link- <https://onlinelibrary.wiley.com/doi/epdf/10.1002/ajoc.202200041>
7. **Santosh K. Nanda\***, Rosy Mallik, ‘1,2-Difunctionalizations of alkynes entailing concomitant C–C and C– N bond-forming carboamination reactions, *RSC Adv.*, 2022,12, 5847-5870  
Link-<https://pubs.rsc.org/en/content/articlepdf/2022/ra/d1ra06633a?page=search>
8. **Santosh K. Nanda\***, Rosy Mallik, Transition Metal-Catalyzed Carboamination of Alkenes and Allenes: Recent Progress, *Asian J. Org. Chem.* 2021, e202100552 (1 of 25).  
Link-<https://doi.org/10.1002/ajoc.202100552>
9. **Santosh K. Nanda\***, Metal-Free Intramolecular Hydroalkoxylation of Alkyne: Recent Advances, *ChemistrySelect*, 2021, 6, 8511-8526.  
Link-<https://chemistry-europe.onlinelibrary.wiley.com/doi/abs/10.1002/slct.202102426>
10. **Santosh K. Nanda\***, Rosy Mallick, ‘Transition Metal Catalyzed Hydroalkoxylation of Alkyne-An Overview, *Chem.- Eur. J.*, 2021, 27, 15571-15604.  
Link-<https://chemistry-europe.onlinelibrary.wiley.com/doi/10.1002/chem.202102194>

### FROM DOCTORAL AND POST-DOCTORAL DISSERTATION

11. Santosh J Gharpure\*, Dipak J Fartade, Dr. **Santosh K Nanda**, Shipra Somani ‘Hydroalkoxylation-Initiated Cascade on Sulfone-Tethered Aryl Alkynols Gives Cyclic and Spiro-Heterocyclic  $\beta$ -Ketosulfones’ *Org. Lett.* 2023, 25, 33, 6155–6160. Link- <https://doi.org/10.1021/acs.orglett.3c02241>.
12. Santosh J. Gharpure\*, **Santosh K. Nanda**, Diapak J. Fartade “Formal [4+2] Cycloaddition of *o*-Aza-Quinone Methide for the Synthesis of 1,4-Heterocycle-Fused Quinolines” *Adv. Synth. Catal.* 2021, 363, 2562-2567. -  
Link-<https://onlinelibrary.wiley.com/doi/epdf/10.1002/adsc.202100074>
13. Santosh J. Gharpure\*, **Santosh K. Nanda**, Diapak J. Fartade, Dharmendra S. Vishwakarma, “Domino Hydroalkoxylation-[4+2]-Cycloaddition for Stereoselective Synthesis of 1,4-Heterocycle-Fused Chromenes: Rapid Access to the [6-6-7-6] Tetracyclic Core of Cytosporhizins B-D” *Eur. J. Org. Chem.* 2020, 6892-6897. Link-<https://chemistry-europe.onlinelibrary.wiley.com/doi/abs/10.1002/ejoc.201901565>

14. Santosh J. Gharpure\*, **Santosh K. Nanda**, Diapak J. Fartade, “Expeditious Diastereoselective Synthesis of Medium Ring Heterocycle-Fused Chromenes *via* Tandem 8/9-*endo-dig* and 8-*exo-dig* Hydroalkoxylation- Formal-[4+2]-Cycloaddition” *Org. Biomol. Chem.* **2019**, *17*, 8806-8810.  
Link-<https://pubs.rsc.org/en/content/articlelanding/2019/ob/c9ob02030f>
15. Santosh J. Gharpure\*, **Santosh K. Nanda**, Priyanka A. Adate, Yogesh G. Shelke “Lewis Acid Promoted Oxonium Ion Driven Carboamination of Alkynes for the Synthesis of 4-Alkoxy Quinolines” *J. Org. Chem.* **2017**, *82*, 2067-2080.  
Link- <https://pubs.acs.org/doi/abs/10.1021/acs.joc.6b02896>
16. Santosh J. Gharpure\*, **Santosh K. Nanda**, Padmaja, Yogesh G. Shelke “Metal-free Hydroalkoxylation- Formal [4+2] Cycloaddition Cascade for the Synthesis of Ketals” *Chem. - Eur. J.* **2017**, *23*, 10007-10012.  
Link- <https://chemistry-europe.onlinelibrary.wiley.com/doi/abs/10.1002/chem.201701659>
17. Santosh J. Gharpure\*, Dharmendra S. Vishwakarma, **Santosh K. Nanda** “Lewis Acid Mediated “*endo-dig*” Hydroalkoxylation–Reduction on Internal Alkynols for the Stereoselective Synthesis of Cyclic Ethers and 1,4- Oxazepanes” *Org. Lett.* **2017**, *19*, 6534-6537.  
Link-<https://pubs.acs.org/doi/abs/10.1021/acs.orglett.7b03241>
18. Santosh J. Gharpure\*, **Santosh K. Nanda** “Stereoselective synthesis of thiazino[4,3-a] indoles using the *thia*- Pictet-Spengler reaction of indoles bearing *N*-tethered thiols and vinylogous thiocarbonates” *Org. Biomol. Chem.*, **2016**, *14*, 5586-5590.  
Link-<https://pubs.rsc.org/en/content/articlelanding/2016/ob/c6ob00501b>

### PUBLISHED PATENTS

1. “One Pot Process for Synthesizing Functionalized Quinolines *via* Metal-Free, Oxonium Ion Driven Carboamination of Alkynes” Santosh. J. Gharpure\*, **Santosh. K. Nanda**, P. A. Adate, Y. G. Shelke, *Granted, IN-358726*.
2. “Process for synthesis of 1, 4 - heterocycle fused chromene” Santosh. J. Gharpure\*, **Santosh. K. Nanda**, D. J. Fartade, D. S. Vishwakarma, *Granted, IN- 358725*.
3. “Process for synthesis of 1, 4 -heterocycle fused quinolines” Santosh. J. Gharpure\* **Santosh K. Nanda**, *Granted, IN- 357658*

### LABORATORY SKILLS

- *Experienced in* multi-step, micro to macroscale synthesis of biologically active organic compounds; air, light and temperature sensitive (in)organic reactions under inert gas atmosphere using Schlenk line; separation and purification of organic compounds by flash column chromatography, chromatotron, preparative TLC, crystallization, trituration, sublimation, fractional and vacuum distillation, Kugelrohr, solvent purification systems, titration
- *Collaborative exploratory research skills in biological screening:* Synthesized carbazole natural products and their analogues are being screened and tested in Syngenta and the results are in pipeline for publication.

### INSTRUMENTAL SKILLS

- Proficient in elucidating structures of organic compounds by interpreting multidimensional and multinuclear NMR, HRMS (ESI/EI-TOF), GCMS, LCMS, elemental analysis (C, H, N),

FT-IR, UV-VIS and single crystal X-ray analysis

- Expert in operating HPLC (normal and reversed phase), preparative HPLC, hydrogenator (ThalesNano H- cube), microwave reactor (CEM), rotary evaporator (Büchi, Heidolph) immersion cooler & refrigerated circulator (Julabo), sonicator, GC.
- *Administrative responsibilities:* Laboratory-in-charge of HPLC, microwave and Julabo (maintenance and troubleshooting)

**Programming languages:** C, FORTRAN-77, Visual Basic | **Softwares:** MS Office, ChemOffice, JEOL Delta, ACD Spectrus, MestReNova, EndNote, Origin, Illustrator, Photoshop, Acrobat, Flash | **Crystallography:** WinGX, Ortep, Mercury, POVray | **Computation:** Gaussian 09, Gaussview **Databases:** SciFinder, ISI Web of Science, PubMed, Scopus

### CONFERENCE ATTENDED:

- National Conference on Emerging Frontiers in Chemical Sciences-2023 (NCeFCS-2023), PG-Department of Chemistry, Berhampur university, Odisha, Invited Speaker (Topic- Transition Metal-Free Hydroalkoxylation Cascade Enabled Diastereoselective Synthesis of Cyclic Sulfone/-Tethered Benzannulated Heterocycles), 5-6<sup>th</sup> Nov. 2023.
- 16th CRSI National Symposium in Chemistry, IIT Bombay, Maharashtra, India in February 7-9, 2014 (Participation).
- 11th J- NOST Symposium-2016 held at IISER-Bhubaneswar, Odisha, India in December 19-21, 2016. (Oral presentation)
- Chemistry In-House Symposium (CiHS)-2015, IIT Bombay, Maharashtra, India in April 2, 2015 (Oral presentation).
- ICOS 21 at IIT Bombay, Mumbai, December 11-16, 2016 (Poster presentation)

### SYNERGISTIC ACTIVITIES:

Demonstrated impeccable scientific communication skill by assisting the research advisor: in writing successful project proposals and their annual progress and completion reports to various national granting agencies, in preparing course materials, lecture slides, abstracts and presentations for conferences

- **Service to peer-review:** Assisted the research advisor in reviewing ~ manuscripts for journals like *Org. Lett.*, *J. Org. Chem.*, *Chem. Commun.*, *Synth. Commun.*, *Adv. Synth. Catal.*, *Chem.—Eur. J.*, *Green Chem.*, *Eur. J. Org. Chem.*, *Asian J. Org. Chem.*, *Org. Chem. Front.*, *Beilstein. J. Org. Chem. and Chemistry Select*
- **Peer reviewer:** Peer reviewed number for *J. Org. Chem.*, *Chemistry: An Asian Journal*, *Org. Chem. Front.*, *RSC Advance*, *Org. Lett.*

### MENTORING SKILLS

1. Dr. Santosh was leading a team of 7 members as the team lead in the integrated department of drug discovery, BMS-Syngene.

### Course Taught/Teaching:

#### Under Grad:

1. C-III: Organic Chemistry-I (Basic organic chemistry, Stereochemistry, Chemistry of  $\pi$ -bonds)

2. C-III: Organic Chemistry-I Lab
3. C-VI: Organic Chemistry-II (Alcohol, Phenol, Ether, Carbonyl Compounds)
4. C-VI: Organic Chemistry-II Lab
5. C-IX: Organic Chemistry-III (Diazonium Salts, Polynuclear Hydrocarbons)
6. C-IX: Organic Chemistry-III Lab
7. DSE-II: Green Chemistry
8. C-XIV: Organic Chemistry-V (Lipids, Concept of Energy in Biosystems, Pharmaceutical Compounds: Structure and Importance)
9. C-XIV: Organic Chemistry-V Lab

**Post-Grad:**

10. **C.C-102:** Organic Chemistry-I (Reaction Mechanism: Structure and Reactivity, Aliphatic Nucleophilic Substitution, Aliphatic Electrophilic Substitution, Free-Radical Reactions, Elimination Reactions)
11. **C.C-202:** Organic Chemistry-II (Nature of Bonding in Organic Molecules, Addition to Carbon-Carbon Multiple Bonds, Stereochemistry.
12. **C.C-302:** Organic Chemistry-III ( Asymmetric Synthesis, Optical Rotatory Dispersion (ORD) and Circular Dichroism (CD), Rearrangements, Heterocyclic Compounds-Three and Four membered Heterocycles.
13. **C.C-402:** Organic Synthesis and Biomolecules (Protecting Groups, One Group C-C Disconnection, Two-Group C-C disconnection approach.