

Dr. Nishant K. Rasal

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TEAM LEADER (DEPUTY MANAGER) R&D, HIKAL LTD., PUNE

- Leading a team to execute the chemical process development
- Evaluating the enquiry from a client
- 10+ years of cross-functional exposure
- 15+ years of experience as a synthetic chemist

PH.D. IN CHEMISTRY

- Medicinal chemistry
- Catalysis
- Green chemistry

CAREER TIMELINE

- **Jubilant Chemsys, Noida**
2006: Trainee
2007: Res. Associate (Officer)
- **Hikal Ltd., Pune**
2008: Scientist-1 (Officer)
2011: Scientist-2 (Executive)
2016: Scientist-3 (Ass. Manager)
2021: Team Leader (Dy. Manager)
till present

PROFESSIONAL EXPERIENCE

- **Team Leadership:** Preparing monthly, weekly plans to ensure the accomplishment of a project within the specified time and cost parameter. For the last 4 years successfully handling a team (4-5 members) for the execution of day-to-day activities to align with the designed plan. Coordinating with cross-functional teams.
- **Chemical Process Intensification:** Developing a robust process along with the reduction in cost and safety risks for scale-up goals. Performing the innovative science and technology from literature survey and cross-functional interaction to make over the process limitations.
- **Technology Transfer:** Ensuring smooth technology transfer from lab to production unit to scale-up newly developed process up to 1 MT and supporting to fix the troubleshooting whenever required.
- **Business Development:** Evaluating new enquiries from customers to get a cost-effective and scalable route of synthesis by literature survey and chemical cost.
- **Analysis:** Handling HPLC system for daily reaction in-process monitoring.
- **Documentation:** Preparing and finalizing the project documents like a weekly report, preliminary laboratory process, raw material specifications, HAZOP study, vendor qualification, lab development reports, etc.

ACCOUNTABILITIES

- Lead a team of process development chemists and provide technical guidance.
- Lead the projects involving process development, process improvement and validation.
- Ensure planning and organizing lab work in line with agreed targets.
- Ensure representation of process chemistry function within the organization.
- Provide technical support to plant and contribution to fix the troubleshooting.
- Provide support for new RM supplier evaluation by lab validation and documentation.
- Ensure preparation of technical reports for customers and stakeholders.

RESPONSIBILITIES

- Literature survey to identify new feasible synthetic routes for screening in the lab.
- Plan and organize process development work programs to design, develop and establish new products.
- Provide support to team members in designing experiments in the laboratory, planning resources and align team efforts towards agreed targets by effective planning, review and follow-up.
- Lead the projects for improving existing processes to deliver higher yields, reducing costs, new synthetic routes, investigating alternative materials, techniques to improve efficiency and quality.
- Develop the waste treatment methods for the safe disposal of process wastes.
- Analyze and develop chemistry data in terms of regulatory, IP and commercial-scale implementation.
- Regular reporting of process development activities.
- Coordinate process validation in terms of lab-scale validation, scale-up, pilot plant trials, commercial trials, process safety studies etc.
- Provide a support service for solving problems concerning product chemistry encountered during manufacture.
- Actively participate in department functioning and contribute to maintaining best practices, safe and healthy work culture.
- Ensure housekeeping of laboratory, availability of resources and maintenance of equipment.
- Provide support to team members in understanding and avoiding scenarios, incidents that put oneself as well as others to injuries /illness and environmental pollution.
- Ensuring the safety of team members and infrastructure through the right use of PPEs, educating the team on chemical and process hazards, fire protection initiatives, emergency response, risk assessment etc.
- Conflict management, appraisal, review and rewards.

INDUSTRIAL RESEARCH

- Synthetic research on API molecules lacosamide, dextromethorphan, prasugrel, sunitinib etc.
- Synthetic research on API intermediates of drugs mefloquine, elobixibat etc.
- Handled various moisture-sensitive reactions and pyrophoric reagents such as Grignard reagent, LAH, AlCl₃, NaH, NaBH₄, n-BuLi etc.
- Handled highly toxic compounds like sodium cyanide, methyl 2-fluoroacetate, etc. on a kilo scale.
- Handled name reactions are Stille coupling, Suzuki Reaction, Mitsunobu Reaction, Heck coupling, Gabriel synthesis, Grignard reaction, Bayer-Villegar oxidation, Fries rearrangement, Dakin reaction, Knoevenagel condensation etc.
- Synthesis of heterocyclic systems such as thiazole, thiadiazole, oxazole, oxadiazole, pyrazoline, oxazoline, pyrrole etc.
- Good ability in the characterization of organic compounds through various spectroscopic techniques such as ¹H NMR, ¹³C NMR, MASS, IR etc.

PH.D. RESEARCH

- Ph. D. Title: "SYNTHESIS, CHARACTERISATION AND BIOLOGICAL EVALUATION OF NOVEL PYRROLE DERIVATIVES"
- Research Supervisor: Dr. Sangeeta V. Jagtap
- Research work based on:
 - ✓ Design, synthesis of novel heterocyclic derivatives and its *in vitro* and *in silico* biological study.
 - ✓ Organic functional group interconversion using metal-ligand complexes.
 - ✓ Application of natural product curcumin as a ligand to synthesize palladium complex and its application for organic functional group interconversion.

RESEARCH ARTICLES

1. "Nickel-(II)-catalyzed N-formylation and N-acylation of amines."
Sonawane, R. B.; **Rasal, N. K.**; Jagtap, S. V.; **Org. Lett.** **2017**, 19, 2078-2081. (I.F. **2020**, **6.005**)
2. "Copper-(II) Catalyzed N-Formylation and N-Acylation of Aromatic, Aliphatic, and Heterocyclic Amines and a Preventive Study in the C-N Cross Coupling of Amines with Aryl Halides."
Sonawane, R. B.; **Rasal, N. K.**; Bhange, D. S.; Jagtap, S. V.; **ChemCatChem** **2018**, 10, 3907- 3913. (I.F. **2020**, **5.686**)
3. "Novel 2, 4-Dimethyl-5-((E)-3-phenyl-3-oxoprop-1-enyl)-1H-pyrrole-3-carboxylic Acid Derivatives: New Leads in Cancer and Bacterial Chemotherapy."
Rasal, N. K.; Sonawane, R. B.; Choudhari, A. S.; Chakraborty, S. S.; Sarkar, D. D.; Jagtap, S. V.; **ChemistrySelect** **2018**, 3, 9571-9575. (I.F. **2020**, **2.109**)

4. "Application of Curcumin as Ligand in [Pd (Curc-H) 2] Catalyst for Carbon-Carbon Bond Formation in Heck and Suzuki Coupling Reactions."
Bhange, D. S.; **Rasal, N. K.**; Sonawane, R. B.; Jagtap, S. V.; *ChemistrySelect* **2018**, 3, 11230- 11235. (I.F. 2020, 2.109) (Equal contribution)
5. "Ti (IV) doping: An effective strategy to boost Lewis acidic performance of ZnO catalyst in fluorescein dye synthesis."
Jadhav, N. H., Shinde, D. R., Sakate, S. S., **Rasal, N. K.**, Pawar, R. A., *Catalysis Communications* **2019**, 120, 17-22. (I.F. 2020, 3.626)
6. "Heterogeneously Catalyzed Pechmann Condensation Employing the Tailored Zn_{0.925}Ti_{0.075}O NPs: Synthesis of Coumarin"
Jadhav, N. H., Sakate, S. S., **Rasal, N. K.**, Shinde, D. R., Pawar R. A., *ACS Omega* **2019**, 5, 8522-8527 (I.F. 2020, 3.512)
7. "Room-Temperature, Base mediated Selective Synthesis of 2-(Arylamino)ethanols and 2-Aryloxyethanols"
Sonawane, R. B.; Sonawane, S. R.; **Rasal, N. K.**; Jagtap, S. V.; *SynOpen* **2019**, 3, 124-137
8. "Chemoselective O-formyl and O-acyl protection of alkanolamines, phenoxyethanols and alcohols catalyzed by nickel (II) and copper (II)-catalysts."
Sonawane, R. B.; Sonawane, S. R.; **Rasal, N. K.**; Jagtap, S. V.; *Green Chem.* **2020**, 22, 3186- 3195. (I.F. 2020, 10.182)
9. "Potential 2,4-Dimethyl-1H-pyrrole-3-carboxamide bearing benzimidazole template: Design, synthesis, *in vitro* anticancer and *in silico* ADME study."
Rasal, N. K.; Sonawane, R. B.; Jagtap, S. V.; *Bioorg. Chem.* **2020**, 97, 103660. (I.F. 2020, 5.275)
10. "Application of N-Aryl ethanolamines as N, O-Ligand in Nickel-(II) Catalyzed Carbon-Carbon Bond Formation in Heck Coupling Reactions."
Bhange, D. S.; Sonawane, R. B.; **Rasal, N. K.**; Jagtap, S. V.; *ChemistrySelect* **2020**, 5, 10387- 10390. (I.F. 2020, 2.109)
11. "Synthesis, biological evaluation, and *in silico* study of pyrazoline-conjugated 2,4-dimethyl-1H-pyrrole-3-carboxylic acid derivatives."
Rasal, N. K.; Sonawane, R. B.; Jagtap, S. V.; *Arch. Pharm.* **2020**, e2000267. (I.F. 2020, 3.751)
12. "Nose-to-brain delivery of teriflunomide-loaded lipid-based carbopol-gellan gum nanogel for glioma: Pharmacological and *in vitro* cytotoxicity studies."
Gadhav, D. G.; **Rasal, N. K.**; Sonawane, R. B.; Sekar, M.; Kokare, C. R.; *Int. J. Biol. Macromol.* **2020**. (I.F. 2020, 5.162)
13. "Synthesis, characterization and biological evaluation pyrazole tethered pyrazoline-pyrrole derivatives: *in vitro* anticancer and *in silico* ADME study."
Rasal, N. K.; Sonawane, R. B.; Jagtap, S. V.; *Chem. Biodivers.* **2021** (I.F. 2020, 2.408)
14. "A biological study of chalcone clubbed 2,4-dimethylpyrrole-3-carboxamide derivatives as antimicrobial and anticancer agents: Synthesis, *in vitro* evaluation and molecular docking study."
Rasal, N. K.; Bhange, D. S.; Jagtap, S. V.; *Manuscript under review*

EDUCATIONAL QUALIFICATIONS

- | | | |
|---|----------------------|---|
| 🎓 | Apr-2016 to Mar-2021 | Ph.D. in Chemistry
From Baburaoji Gholap College, Sangvi, Pune (Affiliated with Savitribai Phule Pune University) |
| 🎓 | Apr-2004 to Apr-2006 | M.Sc. in Organic Chemistry
First Class (69.25%)
S.P. College, Pune (Affiliated with Savitribai Phule Pune University) |
| 🎓 | Apr-2001 to Apr-2004 | B.Sc. in Chemistry
First Class with distinction (72.42%)
Sangamner College, Sangamner (Affiliated with Savitribai Phule Pune University). |

ACHIEVEMENTS

- 🏆 Highlighted the Ph. D. work in the form of news by Indian Science Wire (Launched by Vigyan Prasar under the guidance of DST in Jan 2017) as title “Pune scientist tweak anti-cancer drug to make it more effective” at following web media on 13 Nov 2018 to highlight our published work.
 - ✓ www.vigyanprasar.gov.in
 - ✓ www.thehindubusinessline.com
 - ✓ www.downtorherth.org.in
 - ✓ www.trendsmap.com
- 🏆 Chairmen Excellence Award for a significant project of the year by Hikal Ltd.
- 🏆 Employee of the month award (2 times) and Spot award (4 times) for significant development in the project by Hikal Ltd.
- 🏆 Long service award (10 years) by Hikal Ltd.

CAREER OBJECTIVES

To interlard my academic qualifications with my present career milestones and contribute to a dynamic research group, offering several challenges where my knowledge will be utilized and thus will stimulate my personal and professional growth.

RESEARCH INTEREST

- Green and cost-effective process development for drug molecules and API intermediates.
- Study of metal complexes and their application for organic reaction interconversion.
- Synthesis of novel heterocyclic molecules and their biological evaluation.

COMPUTER SKILLS

- Proficient in Microsoft Office: Word, Excel and PowerPoint.
- Familiar with chemistry software such as Reaxys, Scifinder, Chem. draw, ISIS Draw, MestReNova etc.

PERSONAL DETAILS

- Nationality : Indian
- Marital Status : Married
- Sex : Male
- Languages Known : English, Hindi and Marathi.
- Date of Birth : 29 April 1984
- Permanent Address : B-401, Geetai Angan, Waghere colony-4, Pimpri Waghere, Pune-17

REFERENCES

- Dr. Pramod Chauhan
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OAT & IIL India Laboratories Pvt. Ltd.
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- Dr. Sangeeta Jagtap
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