

Dr. Nishant K. Rasal



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

- Leading a team to execute
 - ✓ Safe and robust chemical process development
 - ✓ Cost reduction
 - ✓ Effluent reduction
 - ✓ Tech-transfer
 - ✓ Troubleshooting
- Evaluating the client enquiry
- 11+ years of cross-functional exposure
- 16+ years of experience as a synthetic chemist

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

PH.D. IN CHEMISTRY

- Medicinal chemistry
- Catalysis
- Green chemistry

ACCOUNTABILITIES

- **Team Leadership**
 - ✓ For the last 4 years leading a team (6-8 members) to do research work towards development of new or improvement of existing chemical process
 - ✓ Coordinating with cross-functional teams to achieve business targets within the stipulated timeline
- **Chemical Process Intensification**
 - ✓ Developing a robust chemical process along with the reduction in effluent, cost and safety risks designed for scale-up goals
 - ✓ Performing innovative science and technology from literature survey and cross-functional interaction to make over the process limitations
- **Reports preparation for customers and stakeholders**
 - ✓ Preparing and finalizing the project documents like a weekly report, preliminary laboratory process, RM's specifications, HAZOP study, Nitrosamine risk assessment, safety study report, what-if/negative study and stability report, VQ, LDR, investigation report, change control, addendum etc.
- **Support to Tech-Transfer team**
 - ✓ Proactively supporting to the production team for scale-up activity along with troubleshooting whenever required
- **Support to Business Development**
 - ✓ Evaluating new enquiries from customers to get a chemical costing of cost-effective and scalable RoS

RESPONSIBILITIES

- Literature survey to identify new feasible RoS
- Planning and organizing process development work programs to establish new product
- Align team efforts towards agreed targets by effective planning, review and follow-up
- Regular reporting of process development activities
- Coordinating process validation in terms of lab-scale validation, scale-up, pilot plant trials, commercial trials, process safety studies, etc.
- Developing the waste treatment methods for the safe disposal of process wastes
- Providing 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, emergency response, risk assessment etc.
- Conflict management, appraisal, review and rewards
- Ensuring housekeeping of laboratory, availability of resources and maintenance of equipment
- Hiring scientist of entry level

WORK EXPERIENCE

- **Hikal Ltd, R & D, Pune**
Duration: May 2008 to till date
 - ✓ Completed almost 25 lab scale projects up to 5Kg delivery
 - ✓ Completed almost 6 production scale projects including 3-5 times repeat campaign
 - ✓ Drastically reduced the project cost by incorporating telescopic conversion, cheaper solvents, and reagents, recycling of catalysts, etc.
 - ✓ To overcome the quality or shortage issue of KSM's, developed and established the molecule at the production scale
 - ✓ Developed the non-infringing RoS for in-house projects and successfully filled process patent
 - ✓ Developed the synthetic chemical process and delivered lab-scale API molecules lacosamide, bravecto, dextromethorphan, prasugrel, etc. for market seeding.
 - ✓ Developed and established synthetic process of API intermediates of drugs nirmatrelvir, mefloquine, elobixibat, etc. at production scale.
 - ✓ Safely handled various moisture-sensitive reactions and pyrophoric reagents such as Grignard reagent, LAH, AlCl₃, NaH, NaBH₄, n-BuLi, etc at production and/or lab scale.
 - ✓ Handled the reaction under cryo (-85°C), high temperature (180°C), H₂ pressure (20Kg) etc.
 - ✓ Handled highly toxic compounds like sodium cyanide, methyl 2-fluoroacetate, etc. on a kilo scale
 - ✓ Handled name reactions are Gabriel synthesis, Grignard reaction, Bayer-Villegar oxidation, etc. at the production scale.
 - ✓ Handled name reactions are Friedel–Crafts acylation, Fries rearrangement, Dakin reaction, Knoevenagel condensation etc. at lab scale.
 - ✓ Good ability in the characterization of organic compounds through various spectroscopic techniques such as ¹H NMR, ¹³C NMR, MASS, IR, etc.

- **Jubilant Chemsys, Noida**

Duration: May 2006 to Feb 2008

- ✓ Worked as an FT to synthesize novel heterocyclic compounds like thiazole, thiadiazole, oxazole, oxadiazole, pyrazoline, oxazoline, pyrrole, etc. at mg to gram 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.

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 it's *in vitro* and *in silico* biological study
 - ✓ Organic functional group inter-conversion using metal-ligand complexes
 - ✓ Application of natural product curcumin as a ligand to synthesize palladium complex and its application for organic functional group inter-conversion

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.”
Gadhane, 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. “Antimicrobial and antiproliferative study of chalcone clubbed 2,4-dimethylpyrrole-3-carboxamide derivatives: Synthesis and *in vitro* evaluation.” **Rasal, N. K.**; Jagtap, S. V.; Bhange, D. S.; *J. Heterocycl. Chem.* **2021** (I.F. **2020**, **2.193**)

PATENT

-  “An improved process for preparation of substantially pure Glycine tert-butyl ester and its salt thereof” Filled as an Indian Patent on June 2021

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%)
From 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.
- 🏆 Chairmen Excellence Award for a significant project of the year by Hikal Ltd
- 🏆 Employee of the month award (2 times) and Spot award (5 times) for significant development in the project by Hikal Ltd
- 🏆 Long service award (10 years) by Hikal Ltd

COMPUTER SKILLS

- Proficient in Microsoft Office: Word, Excel and PowerPoint
- Reporting of research work and analytical data analysis through slideshows
- Familiar with chemistry software such as Reaxys, Scifinder, ChemDraw, ISIS Draw, MNova, 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

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