

# Vivek's CV

## Dr. Vivek K. Mishra

(M.Sc., M.Phil., Ph.D.)

Senior Scientist

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### Personal details:

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DOB & Place : 20<sup>th</sup> Feb 1985, Sitapur  
Nationality : Indian  
Marital status : Married  
Languages Known : English (fluent), German (Basic, A2), Hindi (native)  
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### Summary:

- ❖ **Details:** Oriented Chemist, expert in enantioselective synthesis, route design, and characterization of organic materials, team lead, sound knowledge of analytical techniques.
- ❖ **Highlights:** Trained in Organic Chemistry, multistep synthesis, advanced chemical research, reaction optimization, time managements and troubleshooting skill.
- ❖ **Teaching:** Lecturer winter semester (one month, C.P.E.T. Lucknow, India), Teaching Assistant (two and half years, IIT Mandi, India), Lab Supervisor (Advanced Organic Chemistry, University of Tübingen, Germany).
- ❖ **Thesis supervision:** Two master thesis supervised at the University of Groningen, the Netherlands.

### Interests:

- ❖ **Research interests:** Vaccine discovery, natural product isolation, synthesis & biological evaluation, API process chemistry, drug discovery, agrochemicals.
- ❖ **Other interest:** Develop a drug delivery system: "*Photo-controlled targeted drug delivery against Tuberculosis*".

### Education:

Degree	Institute/University	Subjects	Year	%age	Remark
Ph.D.	University of Tübingen, Germany (THE 2019 rank 89)	Organic Chem.	2016	Magna cum Laude	Started Ph.D. at IIT Mandi
M.Phil.	University of Lucknow, India	Analytical Chem.	2009	69.0	India in 2010.
M.Sc.	University of Lucknow, India	Chemistry	2007	66.5	
B.Sc.	University of Lucknow, India	Chem., Zoo., Bot.	2004	64.6	

### Thesis titles:

- ❖ **Ph.D.:** "Studies on C-H-Activation, Organocatalysis, and Synthesis of Amphidinolide Q."
- ❖ **M.Phil.:** "Conformational Analysis of Biologically Relevant Heterocyclic Compounds &  $\beta$ -peptide Drug Interaction by using NMR Spectroscopy."

### International Awards:

- ❖ Awarded Bentham Science Ambassador award in 2019.
- ❖ Awarded two times support Scholarship by the German University Association to present a poster in the 15<sup>th</sup> Belgian Organic Synthesis Symposium in Antwerp.

- ❖ Awarded travel scholarship by the German Chemical Society to deliver a talk in Anatolian Conference on Synthetic Organic Chemistry (ACSOC) 21-24 March 2016 Kusadasi-Aydin, Turkey.
- ❖ Awarded with DAAD Sandwich Model Scholarship by the DAAD Germany for two years.

#### National Awards:

- ❖ Awarded Senior Research Fellowship (SRF) by IIT Mandi, India (Oct 2012 – Sep 2013).
- ❖ Awarded Junior Research Fellowship (JRF) by IIT Mandi, India (Oct 2010 – Sep 2012).
- ❖ Secured All India 34<sup>th</sup> rank in Council of Scientific and Industrial Research, National Eligibility Test (CSIR-NET), June 2011.
- ❖ Qualified GATE-2010.

#### Thesis Supervised at the University of Groningen:

Student	Year	Degree	Project Title
Anne Zimmer	2018	M.Sc.	Riboflavin based catalysts design for the generation of diimide towards alkene reductions.
Isser Iwan	2017	M.Sc.	Towards the total synthesis of Fortucine using new synthetic pathways.

#### Research Experience:

Jan 2020-till date	<p><i>Senior Scientist at Kinetic Evaluation Instruments BV the Netherlands</i></p> <ul style="list-style-type: none"> <li>• Total synthesis of antigens, reaction optimization up to 50 g scale, write SOPs, team lead, characterization of chemically synthesized organic molecules and impurities.</li> </ul>
Jan 2017 – Dec 2019	<p><i>Postdoc-Chemist at the University of Groningen the Netherlands in an industry funded research project (Research Group: Prof. Dr. A. J. Minnaard)</i></p> <ul style="list-style-type: none"> <li>• An efficient enantioselective synthesis design of diphosphatidyl trehalose, an antigen present in <i>Salmonella typhi</i>, synthesis and structural assignment are completed, its activity as a vaccine adjuvant is under investigation.</li> <li>• Synthesized &amp; Functionalized several tuberculosis antigens such as DATs (diacetyl trehalose), TbAd (tuberculosinyl adenosine) and their derivatives. Attached them onto the surface utilizing click, and thiol-ene reactions in order to prepare cast effective diagnostic devices for tuberculosis detection.</li> <li>• Completed the synthesis of new purine-based antigens in order to prove the structures of antigens isolated from Mycobacterium.</li> <li>• Quality control using Q-NMR.</li> </ul>
Oct 2013 – Dec 2016	<p><i>Research Scientist, University of Tubingen, Germany (Research Group: Prof. Dr. Martin E. Maier)</i></p> <ul style="list-style-type: none"> <li>• Achieved enantioselective synthesis of bioactive macrolide, Amphidinoilide Q.</li> <li>• Designed &amp; synthesized an organocatalyst used in enantioselective alkylation of indoles to make biologically active species.</li> <li>• Executed synthesis of alkaloid derivative employing C-H-activation.</li> </ul>
Oct 2010 – Sep 2013	<p><i>Visiting Ph.D. student, IISc Bangalore (Research Group: Late Prof. A. Srikrishna) &amp; Ph.D. student, IIT Mandi, India (Research Group: Dr. P. C. Ravikumar)</i></p> <ul style="list-style-type: none"> <li>• Carried out Baylis-Hillman reaction on different substrates.</li> <li>• Route design and synthesis of an alkaloid Huperzine-A active against Alzheimer's disease.</li> <li>• Developed chemoselective oxidation strategy.</li> </ul>
Jun 2009 – May 2010	<p><i>Junior research fellow, GBPUAT Pantnagar, India (Research Group: Prof. M. G. H. Zaidi)</i></p>

Synthesized CNT integrated epoxy-nanocomposite, characterized over universal wear, impact, hardness, scanning and transmission electron microscopy, spectrophotometry, DC-conductivity.

Feb 2009 – May 2009 *Research Intern, Indian Institute of Chemical Technology India (Research group: Dr. B. Jagadeesh)*

- Conformational analysis of biologically relevant heterocyclic compounds & beta-peptide drug interaction by using NMR spectroscopy.

### Skills:

#### **Laboratory**

- Almost 10 years' experience in organic synthesis.
- Optimized reactions in mg scale and scaled up upto gram scale.
- Management of project and lab, delivery of projects within the designed time frame.
- Excellent planning and time managements.
- Worked in team and ability to lead a team.
- Writing technical reports, publications, communicate and present a report to scientific community.
- Capable to design shortest route for organic molecules, relevant literature search and survey.

#### **Analytical**

- Professional user of NMR (1D, 2D and Q NMR), IR, UPLC-MS.
- Frequently used HPLC, UPLC-MS, UV-Vis, GC-MS and polarimetry.
- Material purification, flash column, HPLC, and Grace.

#### **IT (computer skill)**

- Professional user of MS, PowerPoint etc.
- Professional user of Scifinder, Reaxis, ACD Labs, MestReNova, 10 & 12, mBook, ChemSketch.

### Conferences/Symposia/workshops:

1. Mishra, V. K.; Minnaard, A. J. Synthesis of an immunogenic glycolipid from Salmonella typhi, Organic Chemistry National Symposium, 5th April 2019, De ReeHorst in Ede (Organized by the KNCV Division of Organic Chemistry) (*Short talk*).
2. Mishra, V. K.; Minnaard, A. J. The Synthesis of alkene-conjugated Diacyl Trehalose, An Antigen of Mycobacterium Tuberculosis, International Molecular Machines Nobel Prize Conference, 2017, Groningen, The Netherlands. (*poster*).
3. Mishra, V. K.; Ravikumar, P. C.; Maier, M. E. Total Synthesis of Amphidinolide Q, Anatolian conference on synthetic organic chemistry, 2016, Kusadasi, Turkey (*short talk*).
4. Mishra, V. K.; Ravikumar, P. C.; Maier, M. E. CH-Activation approach towards the core structure of the alkaloid gama-Lycorane, 15th Belgian Organic Synthesis Symposium (BOSS) 2016, Antwerp, Belgium. (*poster*).
5. X-ray workshop, University of Groningen, The Netherlands, Feb 19-23, 2018 (*workshop course*).
6. 2<sup>nd</sup> National Conference on Nanomaterial's & Nanotechnology, Department of Physics, University of Lucknow, Lucknow Dec 21- 23, 2009.
7. Symposium on Magnetic Resonance & Biomedical Mimetic, IICT Hyderabad Feb 2-5, 2009.
8. Indian Society of Analytical Scientist (ISAS) Delhi Chapter "Application of Analytical Techniques for Characterization of Biomolecules, University of Lucknow, Lucknow Aug 2-3, 2008.

### Publications:

1. **Mishra, V. K.**; Buter, J., Blevins, M., Witte, M. D.; Rhijn, I. V.; Moody, B. D.; Brodfeld, J.; Minnaard, A. J. Total synthesis of immunogenic trehalose phospholipid from Salmonella Typhi and elucidation of its *sn*-regiochemistry by mass spectrometry. *Org. Lett.* **2019**, *21*, 5126 (I. F. 6.491).
2. Reinink, P.; Buter, J.; **Mishra, V. K.**; Ishikawa, E.; Cheng, T.-Y.; Willemsen, P. T. J.; Porwollik, S.; Brennan, P. J.; Heinz, E.; Mayfield, J. A.; Dougan, G.; van Els, C. A.; Cerundolo, V.; Napolitani, G.; Yamasaki, S.; Minnaard, A. J.; McClelland, M.; Moody, D. B.; Van Rhijn, I., Discovery of trehalose phospholipids reveals functional convergence with mycobacteria. *J. Exp. Med.* **2019**, *216*, 757. (I. F. 10.790).
3. **Mishra, V. K.**; Ravikumar, P. C.; Maier, M. E. Formal total synthesis of Amphidinolide Q. *J. Org. Chem.* **2016**, *81*, 9728. (I. F. 4.805).
4. **Mishra, V. K.**; Ravikumar, P. C.; Maier, M. E. C–H-Activation approach towards the core structure of the alkaloid  $\gamma$ -lycorane. *Tetrahedron* **2016**, *72*, 6499. (I. F. 2.651).
5. Chebolu, R.; Bahuguna, A.; Sharma, S.; **Mishra, V. K.**; and Ravikumar, P. C. An unusual chemoselective oxidation strategy by an unprecedented exploration of an electrophilic center of DMSO: a new facet to classical DMSO oxidation. *Chem. Commun.* **2015**, *51*, 15438. (I. F. 6.290).
6. **Note: Several manuscripts are under preparation.**

#### References:

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#### Declaration:

*I hereby declare that all above-mentioned information is in accordance with fact or truth up to my knowledge and I bear the responsibilities for the correctness of the above-mentioned.*



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