Curriculum vitae

PERSONAL INFORMATION

Dr. Vitthal Saptal

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Sex Male | Date of birth 18/09/1987 | Nationality Indian

WORK EXPERIENCE

01/09/2025-Present

Ramanujan Fellow (Anusandhan National Research Foundation, Govt. of India)

Shivaji University, Kolhapur, India

Design and development of catalysts for sustainable catalytic systems and advancing material chemistry for organic synthesis and energy-related applications.

16/01/2023–30/08/2025

Marie-Curie Fellow (MSCA, Seal of Excellence, EU Horizon 2020)

Project: SACforCO2 – 10106437

Politecnico di Milano, Italy

Design of Single Atom Catalysts (SACs) based on the well-defined support material for challenging organic transformations like hydroelemenation and cascade catalysis.

Adviser: Prof. Dr. Gianvito Vilé

25/11/2021–31/12/2022

Postdoctoral Research Fellow

Adam Mickiewicz University, Poznan, Poland.

*Research on the development of heterogenized fluoroarene borane and SACs for the hydroelementation [**B, Si**] of imines, alkynes, alkenes and dienes and design of heterogenous sinle and bimetallic Single Atom Catalysts (SACs) for diboration and hydrosilylation reactions.*

Adviser: Prof. Dr. Jedrzej Walkowiak

07/01/2021–18/11/2021

Institutional Postdoctoral Fellow

Indian Institute of Technology (IIT) Kanpur, India

Research on development pincer type-catalysts multidentate catalysts and thier applications in various challenging transformations using hydrogen borrowing processes.

Adviser: Prof. Dr. J. K Bera

29/09/2019–28/10/2020

Postdoctoral Research Fellow

Guangdong Technion Israel Institute of Technology (GTIIT), Shantou, China.

Research on development organometallic catalysts for the polymerization reactions and hydroelementation reactions of challenging substrates using heterogeneous and homogeneous tandem catalysis.

Adviser: Prof. Dr. Sehoon Park

09/08/2018–08/08/2019

Postdoctoral Research Fellow

Pohang University of Science and Technology (POSTECH), Pohang, S. Korea.

Development of confined ultrafine metal nanoparticles by fabrication active support of mesoporous silica and covalent organic framework as support and its catalytic applications for the C-H bond activation of 2H-indazole and chemo-selective hydrogenation of 3-nitrostyrene under microfluidic condition.

21/08/2013–20/06/2018

Doctor of Philosophy (Ph.D.)

Institute of Chemical Technology, Mumbai, Maharashtra, India.

Thesis Title: "Development of Sustainable Catalysts for the Chemical Conversion of Carbon Dioxide

to Cyclic Carbonates, Oxazolidinones, Quinazoline-2,4(1*H*,3*H*)-diones and N-formylation of Amines"

Adviser: Prof. Dr. B. M. Bhanage

Utilizing sustainable catalysts like Ionic Liquids, graphene oxide, and mesoporous silica, CO_2 is transformed into valuable chemicals. These catalysts, both homogeneous and heterogeneous, enable reactions with CO_2 to produce cyclic carbonates and dimethyl carbonate. The process involves the conversion of CO_2 into reactive intermediates, such as epoxides and aziridines. Additionally, 2-aminonitriles and amines are utilized, leading to the synthesis of oxazolidinones and quinazoline-2,4(1H,3H)-diones. The reactions occur under mild conditions, showcasing the efficiency of the developed catalysts in sustainable chemical transformations.

25/02/2013–18/08/2013 **Project Assistant (PA-II)**
National Chemical Laboratory (NCL), Pune

Project Title *"New approaches towards understanding of Drug Dynamics and to accelerate the Drug Discovery"* Synthesized and characterized various derivatives (90) 1,2,4-triazole-3-thione as anti-mycobacterial agents.

EDUCATION AND TRAINING

01/06/2009-30/05/2011 **Master of Sciences (M.Sc.): Chemistry**
SRTM University, Nanded, (India)
First Class (74.20%)

01/06/2006-30/05/2009 **Bachelor of Sciences (B.Sc.): Chemistry**
Solapur University Solapur (India)
First Class with Distinction (70.00%)

01/07/2004-31/04/2006 **Higher Secondary School Certificate (HSC): Science**
Pune Board, Pune (India).
Second Class (51.10%)

01/06/2002-31/04/2004 **Secondary School Certificate (SSC): General**
Pune Board, Pune (India).
First Class (69.59%)

PUBLICATIONS

- Peer Reviewed Publications: (3 Manuscripts are under construction)

24. An Adaptive Palladium Single-Atom Catalyst Enabling Reactivity Switching Between Borylation and C–C Coupling

Vitthal B. Saptal, C. Saetta, A. Laufenböck, M. Sterrer, I. S. Kwon, A. Lucotti, M. Tommasini, O. Tomanec, A. Bakandritsos, G. Di Liberto, G. Pacchioni, and G. Vilè,

J. Am. Chem. Soc. **2025**, DOI: *.org/10.1021/jacs.4c17943* (selected for **front cover**).

(Journal highlight; *Synfacts* **2025**, 934, https://doi.org/10.1055/a-2653-3889)

In **10 different news articles** such as, 1) eurekalert.org/news-release, 2) miragenews.com, 3) scienmag.com, 4) bioengineer.org, 5) phys.org/news, 6) kayiprihtim.com, 7) chemeurope.com, 8) chemie.de/news/, 9) chemeurope.com/en etc..)

23. Regioselective Multiboration and Hydroboration of Alkenes and Alkynes Enabled by Platinum Single Atom Catalyst

P. Huninik, **Vitthal B. Saptal**,* P. Sharma, M. Slaby, R. Langer, P. Kumar, A. S. Zeraati, X. Wang, M. Petr, M. Otyepka, M. B. Gawande, R. Zbořil, S. Kment, J. Walkowiak, *ACS Catalysis*, **2025**, DOI, cs-2025-03767t, (**I.F. 13.084**) (*corresponding author, selected for* Front cover).

22. Magnetically Recyclable Borane Lewis Acid Catalyst for Hydrosilylation of Imines and Reductive Amination of Carbonyls

Vitthal B. Saptal, P. Ranjan, R. Zbořil and J Walkowiak, *ChemSusChem*, 2024, doi.org/10.1002/cssc.202400058. (Front cover)

21. Carbonylative Self-Coupling of Aryl Boronic Acids Using a Confined Pd Catalyst within Melamine Dendron and Fibrous Nano-Silica: A CO Surrogate Approach

Y. A. Kolekar,[§] **Vitthal B. Saptal**,[§] BM Bhanage, *Chemistry–A European Journal*, 2023, DOI:e202301381. (§ equal contribution).

(Highlighted in *Synfacts*. 2023; 19(12): 1234, DOI: 10.1055/s-0043-1763583)

20. Single-Atom Catalysis in Organic Synthesis

Vitthal B. Saptal, V. Ruta, MA Bajada, G. Vilé, *Angew. Chem. Int. ed.***, 2023,** DOI:e202219306.

(Frontispiece, most view, downloads and most cited) **(I.F. 16.6)**

19. Perception of glycerol carbonate as green chemical: Synthesis and applications

S. M Gade, **Vitthal B. Saptal**, BM Bhanage, *Catalysis Communications*, **2022**, 172, 106542.

(*Second in the list of the most downloaded article from Catalysis Communication*)

18. Recent advances in carbon dioxide adsorption, activation and hydrogenation to methanol using transition metal carbides

P. Ranjan. **Vitthal B. Saptal** and J. K. Bera, *ChemSusChem*, **2022**, 15, DOI:e202201183 (1 of 37) (**I.F. 9.14**) (Frontispiece)

17. Recent Progress in Transition-Metal-Catalyzed Asymmetric Reductive Amination

Noor U D,[§] **Vitthal B. Saptal,**[§] Matthias Beller, and J K Bera, *ACS Catalysis,* **2021***,* 2021, 11, 13809–13837, § equal contribution (**I.F. 13.084**)

16. Nitridated Fibrous Silica (DFNS): Robust and Efficient Catalysts for Chemical Fixation of Carbon Dioxide to Cyclic Carbonates

Vitthal B. Saptal, R. Singh, G. Juneja, S. Singh, S. M. Chauhan, V. Polshettiwar and B. M. Bhanage *ChemCatChem*, **2021**, *13*, 1-9 (I. F. **5.5**)

15. Recent Advances in Transition Metal-Free Catalytic Hydroelementation (E = B, Si, Ge, Sn) of Alkynes

Vitthal. B. Saptal, R. Wang, S. Park, *RSC Adv*. 2020, 10, 43539-43565, invited review article)

14. N-Heterocyclic Olefins as Robust Organocatalyst for the Chemical Conversion of Carbon Dioxide to Value-Added Chemicals,

Vitthal B. Saptal, and B. M. Bhanage, *ChemSusChem*, **2016**, *9*, 1980-1985. (I. F. **9.14)**.

(TOP Ten most cited articles published in ChemSusChem in 2016)

13. Bifunctional Ionic Liquids Derived from Biorenewable Sources as Sustainable Catalysts for Fixation of Carbon Dioxide,

Vitthal B. Saptal, and B. M. Bhanage, *ChemSusChem*, **2016**, *6*, 1145-1151. (**I. F. 9.14)**

12. Recent Advances in Heterogenization of Homogeneous Catalysis,

V. Shende, **Vitthal B. Saptal** and B. M. Bhanage, *Chem. Rec.* **2019***, 19,* 1–23 (Review **I. F. 6.77**).

11. Hybrid Amine-Functionalized Graphene Oxide as a Robust Bifunctional Catalyst for Atmospheric Pressure Fixation of Carbon Dioxide using Cyclic Carbonates,

Vitthal B. Saptal, T. Sasaki, K. Harada, D Nishio-Hamane, B. M. Bhanage*, *ChemSusChem*, **2016**, *9*,

644-650. (**I. F. 9.14)**.

10. Pd Nanoparticles Immobilized on Amine Functionalized Graphene oxide: a Novel and Efficient Catalyst for the Suzuki and Carbonylative Suzuki Coupling Reactions.

Vitthal B. Saptal, M. V. Saptal, R. Mane, T. Sasaki and B. M. Bhanage* *ACS Omega*, **2019**, *4*, 643-649.

9. Ru@PsIL Catalysed Synthesis of N-Formamides and Benzimidazole using Carbon Dioxide and Dimethylamine Borane

Vitthal B. Saptal, T. Sasaki, B. M. Bhanage* *ChemCatChem*, **2018**, 10, 2593-2600. (**I. F. 5.5)**

8. Ionic Liquid Immobilized on Graphene Oxide Containing Palladium Metal Ion as an Efficient Catalyst for the Alkoxy, Amino and Phenoxy Carbonylation Reactions.

V. V. Gaikwad, **Vitthal B. Saptal**, K. Harada, T. Sasaki, D. Nishio-Hamane and B. M. Bhanage *ChemNanoMat*, **2018**, 4, 575-582. **(I. F. 3.15)**

7. Fabrication of amine and ZrO_2 on MCM-41 as bifunctional catalysts for the fixation of carbon dioxide to cyclic carbonates.

Vitthal B. Saptal, B. Nanda, K. M. Parida and B. M. Bhanage, *ChemCatChem* **2017**, DOI: 10.1002/cctc.201700656. **(I. F. 5.5)**

6. Current advances in heterogeneous catalysts for the synthesis of cyclic carbonates from carbon dioxide.

Vitthal B. Saptal, and B. M. Bhanage, *Curr Opin Green Sustain Chem*., **2017**, *3*, 1-10. (Review) **(I. F. 7.41)**

5. Bifunctional Ionic Liquids for the Multitask Fixation of Carbon Dioxide into Valuable Chemicals,

Vitthal B. Saptal, B. M Bhanage*, *ChemCatChem*, **2016**, *8*, 244-250. (**I. F. 5.5)**

4. $B(C_6F_5)_3$: a Robust Catalyst for the Activation of CO_2 and dimethylamine borane for the N-formylation reactions,

Vitthal B. Saptal, G. Juneja and B. M. Bhanage, *New J Chem.*, **2018**, 42, 15847-15851. (**I. F. 3.5)**

3. State-of-the-art catechol porphyrin COF catalyst for chemical fixation of carbon dioxide via cyclic carbonates and oxazolidinones,

Vitthal B. Saptal, D. B Shinde, R. Banerjee, B. M. Bhanage, *Catal. Sci. Technol.*, **2016**, *6*, 6152-6158. (**I. F. 6.2)**

2. Metal ligand Cooperative Ru(II) Catalyst for Deaminative Coupling of Primary Amines to Symmetric Secondary Amines

S. Yadav, P. Ranjan, V. Chaurasia, S. De, Vitthal B. Saptal and J. K. Bera* Inorganic Chemistry (Submitted)

1. Bimetallic Ni-Pt Single Atom Catalysts for Stereoselective Hydrosilylation of Alkynes and alkenes.

Vitthal B. Saptal, et. al (Under construction)

Book Chapter

1. Organocatalytic Reductive Functionalization of Carbon Dioxide
   Vitthal B. Saptal et al. Springer Nature. Title of the edition “Sustainable Utilization of Carbon Dioxide - From Waste to Product” (Accepted)

Conferences

8. **Invited Speaker***:* International Conference on Sustainable Catalysis: Synthesis, Theory, and Applications (SusCat-STA 2024), Udaipur, India | July 22-26, 2024.

7. Presented as a **plenary resource person** at the international conference of 'Chemistry and Environment Interface 2020' Arts Commerce and Science College, Lanza, Ratnagiri. On Sustainable Fixation of CO_2.

6. Oral presentation in "23rd National Symposium on Catalysis (CATSYMP-23)" at Bangaluru on 'Bifunctional Ionic Liquids Derived from Biorenewable Sources as Sustainable Catalysts for Fixation of Carbon Dioxide'.

5. Poster presented in Conference on Advances in Catalysis for Energy and Environment (CACEE-2018) on 'Bifunctional Ionic Liquids Derived from Biorenewable Sources as Sustainable Catalysts for Fixation of Carbon Dioxide'.

4. 'N-Heterocyclic Olefins as Robust Organocatalyst for the Chemical Conversion of Carbon Dioxide to Value-Added' Chemicals by Vitthal B. Saptal International conference on Asia Pacific Catalysis-7 (APCAT-7) organized by Institute of Chemical Technology, Mumbai.

3. 'Bifunctional Ionic Liquids Derived from Biorenewable Sources as Sustainable Catalysts for Fixation of Carbon Dioxide' by Vitthal Saptal in New Frontiers in Chemistry-from Fundamental to Application-II (NFCFA-II) at BITS Pilani, Goa.

2. 'Bifunctional Ionic Liquids for the Multitask Fixation of Carbon Dioxide into Valuable Chemicals' by Vitthal B. Saptal in 19th Chemical Research Society of India (CRSI) organized by North Bengal University.

1. "Attended international conference entitled "International Symposium on Ionic Liquids (ISOIL_2016)" organized by Institute of Chemical Technology, Mumbai in collaboration with Reliance Industries Limited.

Invited Talks

1. Invited as a Guest for a lecture at Czech Advanced Technology and Research Institute (CATRIN) Olomouc, Czech, on "Sustainable Catalysis for CO_2 conversion". 7/03/2022
2. Invited as a Guest for a lecture at Vidnyan Mahavidyala Sangola, Maharashtra, India, on 'Research Opportunities after MSc. 7/9/2023
3. Delivered Special Invited Lecture (SIL) at the Conference on Advances in Chemistry for Energy and Environment CACEE -2024 Tata Institute of Fundamental Research (TIFR) Mumbai.
4. Invited Talk International Conference on Advanced Materials for Health, Environment and Energy. Organized by the Department of Chemistry, Islamic University of Science and Technology Kashmir (Friday Feb 28, 2025).

HONOURS AND AWARDS

Ramanujan Fellow (ANRF Gov. of India) Department of Chemistry, Shivaji University, Kolhapur,

Awarded the prestigious Ramanujan Fellowship by the Anusandhan National Research Foundation (ANRF), Government of India (Fellowship No.: ANRF/RJF/2025/000485)

Marie Skłodowska-Curie Actions (MSCA) (European Union)

Politecnico di Milano, Italy, awarded MSCA with score of 97.67/100 from European Union for the postdoctoral research.

Institute Post-doctoral Fellowship (IPDF) Indian Institute of Technology (IIT), Kanpur awarded IPDF a 3-year fellowship to perform a research activity at the IIT Kanpur

National Eligibility Test for Junior Research Fellow (NET, UGC-JRF) of India: Qualified NET-JRF exam for the Ph.D with all India rank -94.

National Eligibility Test for Lectureship award (NET, CSIR-LS) of India: Qualified NET-lectureship exam for the lectureship with all India rank-21

Ekalavya Scholarship: Received Ekalavya Scholarship from the Maharashtra Government for the first-class with distinction in BSc.

REFERENCES

1. **Prof. Dr. B. M. Bhanage,**
   Professor,
   Department of Chemistry, Institute of
   Chemical Technology, Mumbai, India.
   Phone: (+91) 22 33612603
   E-mail: bm.bhanage@gmail.com
   URL: https://bmbhanage.weebly.com/

2 **Prof. Dr. Gianvito Vilé,**
   Dept. Chemistry, Materials and Chemical Engineering
   Politecnico di Milano
   Via Mancinelli 7,
   20131 Milan (Italy)

3 **Prof. Dr. Dinesh Sawant,**
   Assistant Professor,
   Organic Chemistry Division (OCD)
   National Chemical Laboratory, Pune, India
   E-mail: dn.sawant@ncl.res.in
   URL: https://dineshsawant.weebly.com/

4 **Prof. Dr. Manoj B. Gawande,**
   Associate Professor,
   Department of Industrial and Engineering Chemistry,
   Institute of Chemical Technology,
   Mumbai-Marathwada Campus, Jalna-431203.
   Email: mbgawande@yahoo.co.in; mbgawande@gmail.com
   Office: mb.gawande@marj.ictmumbai.edu.in

5 **Prof. Dr. Jedrzej Walkowiak,**
   Associate Professor,
   Centrum Zaawansowanych Technologii
   Uniwersytet im. Adama Mickiewicza
   Uniwersytetu Poznańskiego 10
   61-614 Poznań
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