

## Dr. Swapnil A. Ghungrud

Institute of Chemical Technology,  
Nathalal Parekh Marg, Matunga  
Mumbai, MH, IN

(+91) 8552907043

(+91) 7977574942

[swapnil.ghungrud@gmail.com](mailto:swapnil.ghungrud@gmail.com)

<https://www.linkedin.com/in/swapnil-ghungrud-6451a747/>

### PROFESSIONAL SUMMARY

- Accomplished Ph.D. (Tech.) Chemical Engineering research scholar with experience in leading and managing interdisciplinary R & D projects aimed at the development of hybrid materials made up of reforming catalyst and adsorbent for the sustainable H<sub>2</sub> production via sorption-enhanced reforming process.
- Forward-thinking research scholar with effective and confident research communication skills, both in oral and writing, with > 2 peer-reviewed scientific publications.
- Experience of one year each in operating sophisticated instruments like Scanning electron microscope (SEM) and Transmission electron microscope (TEM).
- Noteworthy soft skills allowing for easy-integration in the multicultural environment thereby engendering trust and respect of collaborators.

### EDUCATION

|                                                                   |                      |
|-------------------------------------------------------------------|----------------------|
| Institute of Chemical Technology, Mumbai                          | Mumbai, Maharashtra  |
| Ph.D. (Tech.) Chemical Engineering Research Scholar               | March 2020           |
| Institute of Chemical Technology, Mumbai                          | Mumbai, Maharashtra  |
| Certificate course on Safety and Risk Management. <b>CGPA: 10</b> | December 2015        |
| University Institute of Chemical Technology, Jalgaon              | Jalgaon, Maharashtra |
| M. Tech. (Chemical Engineering). <b>CGPA: 8.65</b>                | July 2014            |
| College of Engineering and Technology, Akola                      | Akola, Maharashtra   |
| B. Tech. (Chemical Engineering). <b>Percentage: 68.61</b>         | June 2012            |

### RESEARCH EXPERIENCE

**Institute of Chemical Technology, Mumbai** **2015-2020**

- Sorption-enhanced reforming process (SERP), a candidate technique for producing pure hydrogen (H<sub>2</sub>) via simultaneous reforming and adsorptive separation of carbon dioxide (CO<sub>2</sub>). This technology transforms the typical polluting and costly reforming process into a clean and high purity H<sub>2</sub> production technique. This work mainly focuses on development of multi-functional hybrid materials (catalyst + sorbent) for improved H<sub>2</sub> production via sorption-enhanced steam reforming process.
- Designed and developed various multi-functional hybrid materials made up of Co, Ni and adsorbents (calcium oxide and hydrotalcite) whereas SEM, BET, XRD and CO<sub>2</sub>-TPD instruments were used to characterize prepared hybrid materials.
- The prepared hybrid materials were employed in a Fixed-bed reactor system for

improved H<sub>2</sub> production via sorption-enhanced steam reforming of model compounds such as methane, ethanol, glycerol and butanol.

- The activity of hybrid materials was studied by varying different reaction parameters such as temperature, steam to carbon ratios, gas hourly space velocity, regeneration and multi-cycle performance.

#### **CSIR-National Chemical Laboratory, Pune**

**2013-2014**

- Synthesized and studied the reactivity of zeolite beta catalyst and its modified forms during the Friedel-Crafts acylation of mesitylene with acetic anhydride to yield the corresponding ketone.
- Studied various characterization techniques such as BET, SEM, XRD, FTIR, ICP-MS were used to analyze the changes in the structure of catalysts.
- Studies on kinetic modeling and thermodynamic parameters have also been performed for the acylation of mesitylene reaction.

#### **College of Engineering and Technology, Akola**

**2008-2012**

- Study on thermochemical process used for the preparation of CS<sub>2</sub> was performed. Different studies such as material balance, energy balance and cost estimation have also been performed for the thermochemical process.

#### **LEADERSHIP/TEAMWORK EXPERIENCE**

- **2019:** Active co-ordinator of various activities for one-day seminar on “Shaping the Future with Hydrogen” organised by Hydrogen Association of India at Institute of Chemical Technology, Mumbai.
- **2019:** Mentored the graduate students for participating in the competition of “Smart India Hackathon” organised by Government of India.
- **2018:** Hold the position of the PG-REPRESENTATIVE in “SPORTSAGA-2018 Core Team” for one year and organised various programs like SPORTSAGA and ICT GREEN MARATHON at Institute of Chemical Technology, Mumbai.
- **2018:** Teamwork mentality exemplified by working in a team of 15 to organize “National Safety Week” in the Department of Chemical Engineering, ICT, Mumbai.
- **2016:** Successfully completed and volunteered the Orientation program on Chemical Security Risk Management organized by Sandia National Laboratories, USA at Institute of Chemical Technology, Mumbai.
- **2015:** Active co-ordinator in 4th Conference on Waste-Uninterrupted resource and encouraging opportunities organized by ICT, Mumbai and Waste to Energy Research and Technology Council – India.

#### **PUBLICATIONS**

1. **S. A. Ghungrud**, K.D. Dewoolkar, P.D. Vaidya, Cerium-promoted bi-functional hybrid materials made of Ni, Co and hydrotalcite for sorption-enhanced steam methane reforming (SESMR), *Int. J. Hydrogen Energy* 2019, 44 (2), 694-706.

2. **S. A. Ghungrud**, P. D. Vaidya, Improved hydrogen production from sorption-enhanced steam reforming of ethanol (SESRE) using multifunctional materials of cobalt catalyst and Mg-, Ce- and Zr-modified CaO sorbents, *Ind. Eng. Chem. Res.* 2020, 59 (2) 693-703.
3. **S. A. Ghungrud**, P. D. Vaidya, Sorption-enhanced reaction process for glycerol-to-hydrogen conversion over cobalt catalyst supported on promoted hydrotalcites, *Int. J. Hydrogen Energy* 2020, 45 (16) 9440-9450.
4. **S. A. Ghungrud**, S. Mayadevi, J. B. Naik, Liquid-phase acylation of mesitylene over H-Beta zeolite: A kinetic study, *ICACE-TKMCE'14*, ELSEVIER, 278-282.

### **AWARDS AND ACHIEVEMENTS**

- First Rank holder of the University Level Degree Examination in the Master of Technology (M. Tech.) in subject of Chemical Engineering at Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon. **2015**
- Won second prize in the model competition of the event of “QUARK-2011” organised by BITS PILANI, GOA. **2011**

### **PRESENTATIONS/WORKSHOPS/CONFERENCES**

- Attended “2-day Symposium on Chemical Reaction Engineering” organized by National Chemical Laboratory, Pune. **2018**
- Participated in the 11<sup>th</sup> International workshop on Crystallization, Filtration, & Drying (WFCFD) organized by Institute of Chemical Technology, Mumbai. **2017**
- Attended “15-day Orientation Programme in Catalysis” organized by National Centre for Catalysis Research, Indian Institute of Technology, Madras. **2017**
- Attended one-day seminar on “BEHAVIOUR BASED SAFETY” at West End Hotel, Mumbai organized by Indian Chemical Council (ICC). **2016**
- Presented paper in International Conference on “Sustainable Technologies for Energy and Environment in Process Industries” held at NIT Jalandhar, Punjab. **2012**
- Presented a paper at National Conference on “GREENCHEM-2012” organized by Jawaharlal Darda Institute of Engineering and Technology, Yawatmal, Maharashtra. **2012**
- Presented a Poster at National Conference on “Recent Advances in Chemical Engineering (RACE-2012)” organized by University Institute of Chemical Technology, NMU, Jalgaon, Maharashtra. **2012**

### **TECHNICAL EXPERTISE/SKILLS**

- Independently handled Fixed-bed reactor system for hydrogen production.
- Sustainable and eco-friendly hydrogen production.
- Synthesis and Characterizations of catalysts.
- Operated various sophisticated instruments such as Transmission electron microscope (TEM), Scanning electron microscope (SEM), Atomic adsorption spectroscopy (AAS), BET, and Gas chromatography with Thermal Conductivity Detector (TCD) and Flame Ionization Detector (FID).
- Knowledge of interpretation of results acquired from instruments like XRD, FTIR, ICP-

MS, and CO<sub>2</sub>-TPD.

- Pilot-scale implementations.
- Some basic knowledge of computer software's like CHEMCAD, ASPEN Plus, ORIGIN.
- Handled all editions of windows and MS Office.

### **Other**

Languages known: Marathi, Hindi and English.

Hobbies: Playing, Photography and Reading.

### **REFERENCES**

#### **Prof. (Dr.) Prakash D. Vaidya**

Professor of Chemical Engineering,  
Rashtriya Chemicals and Fertilizers Chair,  
Institute of Chemical Technology  
(Formerly UDCT/UICT),  
Matunga, Mumbai-400 019

☎: 022 3361 2014

Mob.: +91 9867296416

Email Id: [pd.vaidya@ictmumbai.edu.in](mailto:pd.vaidya@ictmumbai.edu.in)

#### **Dr. S. Mayadevi**

Chief Scientist,  
Chemical Engineering and Process  
Development Division  
CSIR-National Chemical Laboratory  
Pune, Maharashtra-411 008

☎: 020 2590 2167

Mob.: +91 8149012167

Email Id: : [s.mayadevi@ncl.res.in](mailto:s.mayadevi@ncl.res.in)