

# TEERAWIT (AIR) PRASOMSRI, Ph.D. (U.S. citizen)

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## summary

- 6+ years of industrial experience in catalyst research and development for FCC and GTL applications
- Hands-on experience in designing, operating, and troubleshooting lab-scale testing units
- Knowledge with innovation project management (Idea-to-Market process) and execution of CAPEX project
- Energetic team player/leader, able to communicate effectively with people from diverse backgrounds
- Goal-oriented and hardworking professional with adaptable problem-solving skills

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## experience

### **Clariant Corporation** – Louisville, KY | Sep. 2017 – Present

Senior Research Chemist – Catalysts Business Unit

- Provide engineering/scientific insight and improvement solution for new product development
- Work closely with a production team to develop and commercialize the new product for gas-to-liquid (GTL) technologies which leads to a new business opportunity with \$100 Mio p.a. revenue
- Work with management and senior staff to design, build, and commission a new test unit
- Supervise and train lab technicians
- Lead a team to implement Lean Six Sigma to improve the R&D efficiency

### **Rive Technology, Inc.** – Monmouth Junction, NJ | Jul. 2014 – Aug. 2017

Research Engineer/Project Leader

- Led a small team to develop mesostructured zeolites for industrial applications, including FCC and hydrocracking
- Designed and built a microreactor system integrated with online GC for the catalyst screening
- Assisted and supported a team for FCC catalyst testing (ACE testing) and conducted kinetic modeling
- Ensured the highest standard of laboratory HSSE and served as a safety committee chair

### **Massachusetts Institute of Technology (MIT)** – Cambridge, MA | Sep. 2011 – Jun. 2014

Postdoctoral Associate – supervisor: Prof. Yuriy Román-Leshkov

- Developed cost-effective strategies for biomass conversion to transportation fuels
- Discovered new highly active and selective catalysts for hydrodeoxygenation of biomass-derived oxygenates to unsaturated hydrocarbons using low H<sub>2</sub> pressures
- Investigated biomass-to-hydrocarbon catalytic processes and demonstrated the improvement of biomass depolymerization. The project won a \$1,000,000 fund awarded by the DoE-SBIR phase II

### **University of Oklahoma** – Norman, OK | May 2006 – Aug. 2011

Research Assistant – supervisor: Prof. Daniel E. Resasco

- Established a novel method to measure the extent of hydrogen transfer reaction over zeolites
- Studied the conversion of biomass-derived model compounds under the FCC operating conditions and exhibited the role of hydrogen transfer on the improvement of the zeolite catalyst stability
- Successfully combined spectroscopy techniques and computational calculation to identify reaction intermediates and mechanism

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## research skills

### **Experiments:**

- Experienced in operating and troubleshooting chromatographic equipment (GC and GC/MS)
- Materials synthesis: zeolites, supported metal catalysts, and nanoparticle metal oxides
- Materials characterization: TPD, TPO, TGA, TEM, SEM, BET, Raman, FTIR, XPS, XRF, and XRD
- Reactor design and operation: micro, packed-bed, and Parr reactors

### **Computation:**

- Performed the Density Functional Theory (DFT) calculation by utilizing GAUSSIAN and VASP codes
- Estimated physical, chemical, and electronic properties of molecules
- Applied theoretical calculation in studies of reaction pathways, mechanism, and kinetics

### **Process simulation:**

- Familiar with various simulators: PRO/II, HYSYS.Plant, and ASPEN PLUS

## education

Ph.D., Chemical Engineering | May 2011

University of Oklahoma – Norman, OK

Dissertation: Combined experimental and computational studies of model compounds to gain understanding of catalytic upgrading of bio-oils – supervisor: Prof. Daniel E. Resasco

M.S., Petroleum Technology | Jun. 2007

Petroleum and Petrochemical College, Chulalongkorn University – Bangkok, Thailand

B.S., Chemical Engineering (Fuel Technology) | Jun. 2005

Chulalongkorn University – Bangkok, Thailand

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## publications

### Book chapter:

“Furfurals as chemical platform for biofuels”

D. E. Resasco, S. Sitthisa, J. Faria, T. Prasomsri, and M. P. Ruiz, book chapter in *Heterogeneous in Biomass to Chemicals and Fuels*, 155-188 (2012) ISBN 978-81-308-0462-0, Research Signpost, Ed. D. Kibicka and I. Kubicková

### Journals:

1. M. Shetty, K. Murugappan, T. Prasomsri, W. H. Green, Y. Román-Leshkov “Reactivity and stability investigation of supported molybdenum oxide catalysts for the hydrodeoxygenation (HDO) of m-cresol,” *J. Catal.*, 331:86-97 (2015)
  2. N. Sathitsuksanoh, M. Sawant, Q. Truong, J. Tan, C. G. Canlas, N. Sun, W. Zhang, S. Renneckar, T. Prasomsri, J. Shi, Ö. Çetinkol, S. Singh, B. A. Simmons, and A. George “How alkyl chain length of alcohols affects lignin fractionation and ionic liquid recycle during lignocellulose pretreatment,” *Bioenerg. Res.*, 8:973-981 (2015)
  3. T. Prasomsri, W. Jiao, S. Z. Weng, J. Garcia Martinez “Mesostructured zeolites: bridging the gap between zeolites and MCM-41,” *Chem. Commun.*, 51:8900-8911 (2015)
  4. H. Luo, T. Prasomsri, and Y. Román-Leshkov “Al-MFI nanosheets as highly active and stable catalysts for the conversion of propanal to hydrocarbons,” *Top Catal.*, 58:529-536 (2015)
  5. S. Van de Vyver, C. Odermatt, K. Romero, T. Prasomsri, and Y. Roman-Leshkov “Solid Lewis acids catalyze the carbon-carbon coupling between carbohydrates and formaldehyde,” *ACS Catal.*, 5:972-977 (2015)
  6. A. J. Crisci, H. Dou, T. Prasomsri, and Y. Román-Leshkov “Cascade reactions for the continuous and selective production of isobutene from bioderived acetic acid over zinc-zirconia catalysts,” *ACS Catal.*, 4:4196-4200 (2014)
  7. T. Prasomsri, M. Shetty, K. Murugappan, and Y. Román-Leshkov “Insights into the catalytic activity and surface modification of MoO<sub>3</sub> during the hydrodeoxygenation of lignin-derived model compounds into aromatic hydrocarbons under low hydrogen pressures,” *Energy Environ. Sci.*, 7:2660-2669 (2014) – Cover page image
  8. T. Prasomsri, T. Nimmanwudipong, and Y. Román-Leshkov “Effective hydrodeoxygenation of biomass-derived oxygenates into unsaturated hydrocarbons by MoO<sub>3</sub> using low H<sub>2</sub> pressures,” *Energy Environ. Sci.*, 6:1732-1738 (2013) – Cover page image
  9. M. P. Ruiz, J. Faria, M. Shen, S. Drexler, T. Prasomsri, and D. E. Resasco “Nanostructured carbon-metal oxide hybrids as amphiphilic emulsion catalysts,” *ChemSusChem*, 4:964-974 (2011)
  10. T. Prasomsri, A. T. To, S. Crossley, W. E. Alvarez, and D. E. Resasco “Catalytic conversion of anisole over HY and HZSM-5 zeolites in the presence of different hydrocarbon mixtures,” *Appl. Catal. B-Environ.*, 106:204-211 (2011)
  11. S. Sitthisa, T. Pham, T. Prasomsri, T. Sooknoi, R. G. Mallinson, and D. E. Resasco “Conversion of furfural and 2-methylpentanal on Pd/SiO<sub>2</sub> and Pd-Cu/SiO<sub>2</sub> catalysts,” *J. Catal.*, 280:17-27 (2011)
  12. T. Prasomsri, R. E. Galiasso Tailleir, W. E. Alvarez, T. Sooknoi, and D. E. Resasco “Conversion of 1-tetralone over HY zeolite: an indicator of the extent of hydrogen transfer,” *Appl. Catal. A-Gen.*, 389:140-146 (2010)
  13. T. Prasomsri, R. E. Galiasso Tailleir, W. E. Alvarez, T. Sooknoi, and D. E. Resasco “Conversion of 1- and 2-tetralone over HY zeolite,” *Catal. Lett.*, 135:226-232 (2010)
  14. T. Prasomsri, D. Shi, and D. E. Resasco “Anchoring Pd nanoclusters onto pristine and functionalized single-wall carbon nanotubes: a combined DFT and experimental study,” *Chem. Phys. Lett.*, 497:103-107 (2010) – Cover page image
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