



## MICHAEL S. WONG, PhD

### EDUCATION AND TRAINING

California Institute of Technology	Chemical Engineering	BS	1994
Massachusetts Institute of Technology	Chemical Engineering Practice	MS	1997
Massachusetts Institute of Technology	Chemical Engineering	PhD	2000
University of California, Santa Barbara	Chemistry	Postdoc	2000-01

### PROFESSIONAL APPOINTMENTS

Assistant Professor	Rice University	2001-2007
Associate Professor		2007-2010
Professor		2010-present
<b>Department Chair</b> (three terms)		2014-2025
Tina and Sunit Patel '85 Chair in Molecular Nanotechnology		2020-present
<b>Professor of Chemical and Biomolecular Engineering</b> , of Chemistry (2002), of Civil and Environmental Engineering (2012), of Materials Science and NanoEngineering (2013)		

### LEADERSHIP AND SERVICE APPOINTMENTS

North American Catalysis Society (NACS), <b>Board of Directors</b>	2021-present
Southwest Catalysis Society (SWCS), NACS Chapter, <b>Past-Chair</b>	2010-2011
American Institute of Chemical Engineers Environmental Division, <b>Director</b>	2023-current
AIChE Nanoscale Science and Engineering Forum (NSEF), <b>Chair, Vice Chair, Second Vice Chair, Director of Communications, Past Chair</b>	2005-2012
ACS Division of Catalysis Science & Technology (CATL) <b>Past-Chair</b>	2018-2019
<b>Councilor</b>	2020-2026
ACS Society Committee on Publications (SCOP), <b>Member</b>	2022-present
<i>Environ. Sci. Technol.</i> , <b>Associate Editor</b>	2024-present
ACS National Awards, <b>Selection Committee Chair</b>	2024
U.S. Army Science Board, <b>Member</b>	2018-2021
Research Grants Council (RGC) of Hong Kong, <b>Engineering Panel Member</b>	2024-2027
NSF NEWT (Nanotechnology Enabled Water Treatment) Center, <b>Research Thrust Leader</b>	2015-2025
Rice WaTER (Water Technologies, Entrepreneurship, and Research) Institute, <b>Research Thrust Leader</b>	2024-present
Rice Center for PFAS Abatement and Replacement (Rice PAR), <b>Director</b>	2024-present

### RESEARCH BACKGROUND AND INTERESTS

My research program tackles water, sustainability, and energy technical issues through chemical engineering, materials chemistry, and heterogeneous catalysis approaches. Of current interest are technologies that de-construct molecules, e.g., clean-water catalysis to treat unhealthy, undesirable contaminants like drycleaning and industrial solvents, fertilizer runoff, and PFAS (the "forever" chemicals). My Catalysis and Nanomaterials Laboratory (grants exceeding \$25MM, 200+ publications, 20+ pending/issued patents, 300+ presentations, 1 startup company) has generated over 200 publications, cited cumulatively over 18,000 times. I have an h-index >70.

## SELECTED HONORS AND AWARDS

Henry J. Albert Award, International Precious Metals Institute	2025
Lawrence K. Cecil Award, AIChE	2023
Fellow, Royal Society of Chemistry	2023
Fellow, AIChE	2022
Stanford/Elsevier World's Top 2% Scientists	2022-2024
Presidential Award for Mentoring, Rice University	2021
Meritorious Civilian Service Medal, Department of the Army	2021
Tina and Sunit Patel '85 Chair in Molecular Nanotechnology	2020
Southwest Region ACS Award (highest honor given by ACS region)	2019
William M. McCardell Professor in Chemical Engineering Endowed Chair	2019-2020
Joe W. Hightower Award, ACS – Greater Houston Section	2018
Fellow, ACS	2018
SWCS-NACS Excellence in Applied Catalysis Award	2015
AIChE South Texas Section Best Fundamental Paper Award	2009, 2012, 2020, 2022
AIChE South Texas Section Best Applied Paper Award	2006, 2011, 2013, 2022
Smithsonian Magazine's "37 Under 36" Young Innovator Award	2007
MIT Technology Review's TR35 Young Innovator Award	2006
AIChE Nanoscale Science and Engineering Forum Young Investigator Award	2006

## SIGNIFICANT CURRENT RESEARCH EFFORTS

Engineering Research Center for Nanotechnology Enabled Water Treatment Systems (NEWTS); NSF <b>Senior Personnel</b>	08/2015-07/2025
Understanding the Role of Potassium in VAM Production through in situ Monitoring; Celanese Chemical <b>PI</b>	07/2018-03/2026
Chemical-free light-driven destruction of per- and polyfluoroalkyl substances (PFAS) using non-toxic boron nitride (BN); DOD/EPA/DOE SERDP <b>PI</b>	06/2025-05/2028
PFI-TT: Destroying toxic and persistent perfluoroalkyl substances (PFAS) with Advanced Materials and Light; NSF <b>PI</b>	08/2023-01/2026
PFAS Destruction in Saline Waters Using a Boron Nitride-enabled Photocatalytic Reactor Pilot, US Bureau of Reclamation <b>PI</b>	05/2024-09/2025
Laser-ablated Multimetallic Nanoparticles for Clean Water, IMRA America <b>PI</b>	04/2022-03/2026
Synthesis Fundamentals of Faceted Silver Metal Catalysts for Optimized Ethylene Oxide Selectivity and Reaction Stability, <b>PI</b>	06/2024-05/2027
Scalable halide perovskite photoelectrochemical cell modules with 20% solar-to-hydrogen efficiency and 1000 hours of diurnal durability; DOE <b>co-PI</b>	10/2023-09/2026

## PUBLICATION HIGHLIGHTS (200+ published, [Google Scholar](#))

1. M. O. Nutt *et al.*, "Designing Pd-on-Au Bimetallic Nanoparticle Catalysts for Trichloroethene Hydrodechlorination," **Environ. Sci. Technol.** 39, 1346-1353 (2005). ([link](#))
2. R. K. Rana *et al.*, "Nanoparticle Self-Assembly of Hierarchically Ordered Microcapsule Structures," **Adv. Mater.** 17, 1145-1150 (2005). ([link](#))

3. S. Asokan *et al.*, "The Use of Heat Transfer Fluids in the Synthesis of High-quality CdSe Quantum Dots, Core/Shell Quantum Dots, and Quantum Rods," **Nanotechnology** 16, 2000-2011 (2005). ([link](#))
4. M. O. Nutt *et al.*, "Improved Pd-on-Au Bimetallic Nanoparticle Catalysts for Aqueous-phase Trichloroethene Hydrodechlorination," **Appl. Catal. B. Env.** 69, 115-125 (2006). ([link](#))
5. P. R. LeDuc *et al.*, "Towards an *in vivo* Biologically Inspired Nanofactory," **Nature Nanotech.** 2, 3-7 (2007). ([link](#))
6. K. N. Heck *et al.*, "Observing Metal-catalyzed Chemical Reactions *in situ* using Surface-enhanced Raman Spectroscopy on Pd-Au Nanoshells," **J. Am. Chem. Soc.** 130, 16592-16600 (2008). ([link](#))
7. W. Zhou *et al.*, "Identification of Active Zr WO<sub>x</sub> Clusters on a ZrO<sub>2</sub> Support for Solid Acid Catalysts," **Nature Chem.** 1, 722-728 (2009) ([link](#))
8. J. Yu *et al.*, "Self-assembly Synthesis, Tumor Cell Targeting, and Photothermal Capabilities of Antibody-coated Indocyanine Green Nanocapsules," **J. Am. Chem. Soc.** 132, 1929-1938 (2010). ([link](#))
9. N. Soultanidis *et al.*, "Relating n-Pentane Isomerization Activity to the Tungsten Surface Density of WO<sub>x</sub>/ZrO<sub>2</sub>," **J. Am. Chem. Soc.** 132, 13462-13471 (2010). ([link](#))
10. M. D. Blankschien *et al.*, "Light-triggered biocatalysis using thermophilic enzyme–gold nanoparticle complexes," **ACS Nano** 7, 654-663 (2013). ([link](#))
11. L. Chen *et al.*, "Ring-locking Enables Selective Anhydrosugar Synthesis from Carbohydrate Pyrolysis," **Green Chem.** 18, 5438-5447 (2016) ([link](#))
12. S. Guo *et al.*, "Insights into Nitrate Reduction over Indium-Decorated Palladium Nanoparticle Catalysts" **ACS Catal.** 8, 503-515 (2018). ([link](#))
13. P. Westerhoff *et al.*, "Low Risk Posed by Engineered and Incidental Nanoparticles in Drinking Water" **Nature Nanotech.** 13, 661-669 (2018) ([link](#))
14. K. N. Heck *et al.*, "Catalytic Converters for Water Treatment" **Acc. Chem. Res.** 52, 906-915 (2019). ([link](#))
15. C. A. Clark *et al.*, "Highly Defective UiO-66 Materials for the Adsorptive Removal of PFOS" **ACS Sustainable Chem. Eng.** 7, 6619 (2019). ([link](#))
16. C. A. Clark *et al.*, "Mechanistic Insights into pH-Controlled Nitrite Reduction to Ammonia and Hydrazine over Rhodium" **ACS Catal.** 10, 494-509 (2020). ([link](#))
17. C. L. Conrad *et al.*, "Fit-for-Purpose Treatment Goals for Produced Waters in Shale Oil and Gas Fields" **Water Res.** 173 (2020). ([link](#))
18. L. Duan, B. Wang, *et al.*, "Efficient Photocatalytic PFOA Degradation over Boron Nitride" **Environ. Sci. Technol. Lett.** 7, 613 (2020). ([link](#))
19. Y. Xu *et al.*, "Heavy Oil Viscosity Reduction at Mild Temperatures Using Palladium Acetylacetonate" **Fuel** 294, 120546 (2021) ([link](#))
20. H. Jacobs *et al.*, "Promotional Role of Acid Sites on Aluminosilicate-Supported PdAu for Vinyl Acetate Synthesis" **ACS Catal.** 14, 211 (2024) ([link](#))

**RESEARCH GROUP MENTORSHIP** (25 postdoctoral research associates, 27 PhD graduates, 11 MS/MChE graduates, 47 undergraduate research assistants, 47 visiting students)