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EDUCATION:

National Tsing Hua University	Ph.D. in Materials Science and Engineering	2011-2017
National Tsing Hua University	M.S. in Materials Science and Engineering	2009-2011
National Cheng Kung University	B.S. in Chemical Engineering	2005-2009

RESEARCH EXPERIENCE:

Feb 2021 - Present	Assistant Professor, National Tsing Hua University
July 2019 - Feb 2021	Postdoctoral Fellow, Georgia Institute of Technology Supervisor: Professor Younan Xia and Professor Dong Qin Research Topics: Development of <i>In Situ</i> Surface-Enhanced Raman Spectroscopy (SERS) for Investigating Nanocrystal Growth, Chemical Reaction, Molecular Sensing, and Polymer Physics
Aug 2015 - Aug 2017	Visiting Research Scholar, Georgia Institute of Technology Supervisor: Professor Younan Xia Research Topics: Shape-Controlled Syntheses of Metal Nanocrystals and the Role of Reaction Kinetics
Sep 2011 - Aug 2017	Ph.D. Research, National Tsing Hua University Advisor: Professor Jenn-Ming Wu and Professor Yi-Hsien Lee Ph.D. Thesis Title: Toward a Quantitative Understanding of the Nucleation, Growth, and Thermal Stability of Colloidal Metal Nanocrystals for Photocatalytic Application
Sep 2009 - June 2011	M.S. Research, National Tsing Hua University Advisor: Professor Jenn-Ming Wu M.S. Thesis Title: Thermal Stability of Sol-Gel P-Type Al-N Co-doped ZnO Films and Electric Properties of Nanostructured ZnO Homojunctions Fabricated by Spin-Coating Them on ZnO Nanorods

SCHOLARSHIPS & AWARDS:

Young Scholars Fellowship Program (The Einstein Program), MOST, Taiwan	2020
Postdoctoral Study Abroad Program Scholarship, MOST, Taiwan	2018
Georgia Tech Scholarship for Visiting Research Scholar, USA	2017
Graduate Students Study Abroad Program Scholarship, MOST, Taiwan	2015
CTCI Science and Technology Research Scholarship, Taiwan	2014
Chung Hwa Rotary Educational Scholarship, Taiwan	2012
Member of the Society by The Phi Tau Phi Scholastic Honor Society, Taiwan	2012
President's Scholarship, NTHU, Taiwan	2011
Professor Yan-Ping Shi Memorial Scholarship, NCKU, Taiwan	2009

PEER-REVIEWED PUBLICATIONS:

1. **T. H. Yang**, J. Ahn, S. Shi, and D. Qin*. Understanding the Role of Poly(vinylpyrrolidone) in Stabilizing and Capping Colloidal Silver Nanocrystals. *ACS Nano* 2021, in press.
2. **T. H. Yang**, J. Ahn, S. Shi, P. Wang, R. Gao, and D. Qin*. Noble-Metal Nanoframes and Their Catalytic Applications. *Chemical Reviews* 2021, 121, 796.
3. **T. H. Yang**⁺, Y. Shi⁺, A. Janssen⁺, and Y. Xia*. Surface Capping Agents and Their Roles in Shape-Controlled Synthesis of Colloidal Metal Nanocrystals. *Angewandte Chemie International Edition* 2020, 59, 2.
4. **T. H. Yang**, S. Zhou, M. Zhao, and Y. Xia*. Quantitative Analysis of the Multiple Roles Played by Halide Ions in Controlling the Growth Patterns of Palladium Nanocrystals. *ChemNanoMat* 2020, 6, 576.
5. **T. H. Yang**⁺, K. C. Chiu⁺, Y. W. Harn, H. Y. Chen, R. Cai, S. C. Lo, J. M. Wu, and Y. H. Lee*. Electron Field Emission of Geometrically-Modulated Monolayer Semiconductors. *Advanced Functional Materials* 2018, 28, 1706113. (+Equal Contribution) (Highlighted as Cover).
6. **T. H. Yang**, S. Zhou, K. D. Gilroy, L. Figueroa-Cosme, Y. H. Lee, J. M. Wu, and Y. Xia*. Autocatalytic Surface Reduction and Its Role in Controlling Seed-Mediated Growth of Colloidal Metal Nanocrystals. *Proceedings of the National Academy of Sciences USA* 2017, 114, 13619. (Highlighted in Georgia Tech News: Project Will Provide Reaction Kinetics Data for Deterministic Synthesis of Metallic Nanocrystals, NSF, and Many Other News Media).
7. **T. H. Yang**, H. C. Peng, S. Zhou, C. T. Lee, S. Bao, Y. H. Lee, J. M. Wu, and Y. Xia*. Toward a Quantitative Understanding of the Reduction Pathways of a Salt Precursor in the Synthesis of Metal Nanocrystals. *Nano Letters* 2017, 17, 334.
8. K. D. Gilroy⁺, A. O. Elnabawy⁺, **T. H. Yang**⁺, L. T. Roling, J. Howe, M. Mavrikakis*, and Y. Xia*. Thermal stability of Metal Nanocrystals: An Investigation of the Surface and Bulk Reconstructions of Pd Concave Icosahedra. *Nano Letters* 2017, 17, 3655. (+Equal Contribution)
9. **T. H. Yang**, K. D. Gilroy, and Y. Xia*. Reduction Rate as a Quantitative Knob for Achieving Deterministic Synthesis of Colloidal Metal Nanocrystals. *Chemical Science* 2017, 8, 6730.
10. **T. H. Yang**, Y. W. Harn, M. Y. Pan, L. D. Huang, M. C. Chen, B. Y. Li, P. H. Liu, P. Y. Chen, C. C. Lin, P. K. Wei, L. J. Chen, and J. M. Wu*. Ultrahigh Density Plasmonic Hot Spots with Ultrahigh Electromagnetic Field for Improved Photocatalytic Activities. *Applied Catalysis B: Environmental* 2016, 181, 612.
11. **T. H. Yang**⁺, L. D. Huang⁺, Y. W. Harn, C. C. Lin, J. K. Chang, C. I. Wu, and J. M. Wu*.

- High Density Unaggregated Au Nanoparticles on ZnO Nanorod Arrays Function as Efficient Photocatalysts for Environmental Purification. *Small* 2013, 9, 3169. (+Equal Contribution)
12. **T. H. Yang**, Y. W. Harn, L. D. Huang, M. Y. Pan, W. C. Yen, M. C. Chen, C. C. Lin, P. K. Wei, Y. L. Chueh, and J. M. Wu*. Fully Integrated Ag Nanoparticles/ZnO Nanorods/Graphene Heterostructured Photocatalysts for Efficient Conversion of Solar to Chemical Energy. *Journal of Catalysis* 2015, 329, 167.
 13. **T. H. Yang** and J. M. Wu*. Thermal Stability of Sol-Gel P-Type Al-N Codoped ZnO Films and Electric Properties of Nanostructured ZnO Homojunctions Fabricated by Spin-Coating Them on ZnO Nanorods. *Acta Materialia* 2012, 60, 3310.
 14. S. Zhou⁺, **T. H. Yang**⁺, M. Zhao, and Y. Xia*. Quantitative Analysis of the Reduction Kinetics of a Pt(II) Precursor in the Context of Pt Nanocrystal Synthesis. *Chinese Journal of Chemical Physics* 2018, 31, 370. (+Equal Contribution) (Invited Article: The Celebration of the 60th Anniversary of USTC)
 15. T. S. Rodrigues⁺, M. Zhou⁺, **T. H. Yang**⁺, K. D. Gilroy, A. G. M. Silva, P. H. C. Camargo, and Y. Xia*. Synthesis of Colloidal Metal Nanocrystals: A Comprehensive Review on the Reductants. *Chemistry-A European Journal* 2019, 24, 16944. (+Equal Contribution) (Invited Review)
 16. **T. H. Yang**, L. D. Huang, M. Y. Pan, Y. W. Harn, M. C. Chen, C. C. Lin, P. K. Wei, and J. M. Wu*. Ultrahigh-Density Plasmonic Nanoparticles Sensitized Semiconductor Photocatalysts Profit from Cooperative Light Harvesting and Charge Separation Processes: Experiments, Simulations, and Multifunctional Plasmonics. *Particle & Particle Systems Characterization* 2014, 31, 895.
 17. **T. H. Yang**, Y. W. Harn, K. C. Chiu, C. L. Fan, and J. M. Wu*. Promising Electron Field Emitters Composed of Conducting Perovskite LaNiO₃ Shells on ZnO Nanorod Arrays. *Journal of Materials Chemistry* 2012, 22, 17071.
 18. **T. H. Yang**, S. Zhou, T. H. Yung, C. N. Wei, H. Y. Bor, and J. M. Wu*. Effects of MgO on N Dissolution of P-Type Al-N Codoped Mg_xZn_{1-x}O films. *Journal of The Electrochemical Society* 2012, 159, 140.
 19. **T. H. Yang**, K. C. Chiu, and J. M. Wu*. Compensation of N-Related Defects in P-Type Al-N Codoped MgZnO Films. *Electrochemical and Solid-State Letters* 2012, 15, 153.
 20. S. Zhou, M. Zhao, **T. H. Yang**, and Y. Xia*, Decahedral Nanocrystals of Noble Metals: Synthesis, Characterization, and Applications. *Materials Today* 2019, 22, 108.
 21. C. T. Lee, H. Wang, Ming. Zhou, **T. H. Yang**, and Y. Xia*. One-Pot Synthesis of Pd@Pt_{nL} Core-Shell Icosahedral Nanocrystals in High Throughput through a Quantitative Analysis of the Reduction Kinetics. *Chemistry-A European Journal* 2019, 25, 5322.
 22. S. Zhou, D. Huo, **T. H. Yang**, Z. Lyu, M. Zhao, K. Gilroy, Y. Wu, Z. D. Hood, M. Xie, and Y. Xia*. Enabling Complete Ligand Exchange on the Surface of Gold Nanocrystals through the Deposition and then Etching of Silver. *Journal of the American Chemical Society* 2018, 141, 11898.
 23. L. Figueroa-Cosme, K. D. Gilroy, **T. H. Yang**, M. Vara, J. Park, S. Bao, A. G. M. da Silva, and Y. Xia*. Synthesis of Pd Nanoscale Octahedra through a One-Pot, Dual-Reductant Route and the Kinetic Analysis. *Chemistry-A European Journal* 2018, 64, 1233.
 24. S. Zhou, D. S. Mesina, M. A. Organt, **T. H. Yang**, X. Yang, D. Huo, M. Zhao, and Y. Xia*. Site-Selective Growth of Ag Nanocubes for Sharpening Their Corners and Edges, Followed by Elongation into Nanobars through Symmetry Reduction. *Journal of Materials Chemistry C* 2018, 6, 1384.

25. M. Zhou, H. Wang, M. Vara, Z. D. Hood, **T. H. Yang**, S. Bao, M. Chi, P. Xiao, Y. Zhang, and Y. Xia*. Quantitative Analysis of the Reduction Kinetics Responsible for the One-Pot Synthesis of Pd–Pt Bimetallic Nanocrystals with Different Structures. *Journal of the American Chemical Society* 2016, 38, 12263.
26. H. M. Chiu, **T. H. Yang**, Y. C. Hsueh, T. P. Perng, and J. M. Wu*. Fabrication and Characterization of Well-dispersed Plasmonic Pt Nanoparticles on Ga-doped ZnO Nanopagodas Array with Enhanced Photocatalytic Activity. *Applied Catalysis B: Environmental* 2015, 163, 156.
27. Y. W. Harn, **T. H. Yang**, T. Y. Tang, M. C. Chen, and J. M. Wu*. Facet-Dependent Photocatalytic Activity and Facet-Selective Etching of Silver (I) Oxide Crystals with Controlled Morphology. *ChemCatChem* 2015, 7, 80.
28. C. Y. Su, **T. H. Yang**, Vi. Gurylev, S. H. Huang, J. M. Wu, and T. P. Perng*. Extremely High Efficient Nanoreactor with Au@ZnO Catalyst for Photocatalysis. *Nanotechnology* 2015, 26, 394001.
29. K. C. Chiu, **T. H. Yang**, and J. M. Wu*. Prominent Electric Properties of BiFeO₃ Shells Sputtered on ZnO-Nanorod Cores with LaNiO₃ Buffer Layers. *Nanotechnology* 2013, 24, 225602.

REFERENCES:

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