

Curriculum Vitae
Chia-Kuang Tsung

Assistant Professor of Chemistry
Merkert Chemistry Center, Boston College
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EDUCATION

- **Ph.D.** in Chemistry (September 2002 - September 2007)
Prof. Galen D. Stucky, University of California
- **B.S.** in Chemistry (September 1995 - June 1999)
National Sun Yat-sen University

EXPERIENCE

Assistant Professor of Chemistry [2010-Present]

Boston College, Department of Chemistry

- Develop synthetic tools for fundamental understanding of heterogeneous catalysis
- Synthesize hierarchical zeolite and metal-organics framework materials for heterogeneous catalysis
- Study surface lattice strain controlled electrochemistry catalysis

Postdoctoral Fellow - Prof. Gabor A. Somorjai and Prof. Peidong Yang [2007-2010]

University of California, Berkeley, Department of Chemistry, and Lawrence Berkeley National Laboratory

- Synthesized various metal and metal oxide nanostructures for heterogeneous catalysis and photocatalysis.
- Measured catalysts on flow reactors with detection by gas chromatography.
- *In-situ* study on catalysts under catalytic reaction via *in-situ* high resolution TEM, XPS, and EXAFS.

Graduate Student Researcher - Prof. Galen D. Stucky [2002-2007]

University of California, Santa Barbara, Department of Chemistry and Biochemistry

- Synthesized metal and metal oxide meso- and nano-structures with morphology control.

TEACHING

Boston College, Department of Chemistry

- Instructor for CH 110 General Chemistry II [Spring 2013]
- Instructor for CH 575 Physical Chemistry II (Quantum Chemistry) [Spring 2011]
- Instructor for CH676 Advanced Physical Chemistry (Materials Chemistry) [Fall 2010, 2011, 2012, 2013]

PUBLICATIONS

Total citation: 3781, h-index: 33 (2015/11/01)

57. Chou, L.-Y.; Hu, P.; Zhuang, J.; Morabito, J. V.; Ng, K. C.; Kao, Y.-C.; Wang, S.-C.; Shieh, F.-K.; Kuo, C.-H.; **Tsung, C.-K.**, Formation of hollow and mesoporous structures in single-crystalline microcrystals of metal-organic frameworks via double-solvent mediated overgrowth, *Nanoscale* **2015**, *7*, 19408.
56. Zhuang, J.; Chou, L.; Sneed, B. T.; Cao, Y.; Hu, P.; Feng, L.; **Tsung, C.-K.**, Surfactant-Mediated Conformal Overgrowth of Core-Shell Metal-Organic Framework Materials with Mismatched Topologies, *Small* **2015**, *11*, 5551.
55. Sneed, B. T.; Young, A. P.; **Tsung, C.-K.**, Building up strain in colloidal metal nanoparticle catalysts, *Nanoscale* **2015**, *7*, 12248.
54. Scardi, P.; Leonardi, A.; Gelisio, L.; Suchomel, M. R.; Sneed, B. T.; Sheehan, M. K.; **Tsung, C.-K.**, Anisotropic atom displacement in Pd nanocubes resolved by molecular dynamics simulations supported by x-ray diffraction imaging. *Phys. Rev. B* **2015**, *91*, 155414.
53. Yuan, W.; Jiang, Y.; Wang, Y.; Kattel, S.; Zhang, Z.; Chou, L.-Y.; **Tsung, C.-K.**; Wei, X.; Li, J.; Zhang, X.; Wang, G.; Mao, S. X.; Zhang, Z., In situ observation of facet-dependent oxidation of graphene on platinum in an environmental TEM. *Chem. Comm.* **2015**, *51*, 350-353.
52. Shieh, F.-K.; Wang, S.-C.; Yen, C.-I.; Wu, C.-C.; Dutta, S.; Chou, L.-Y.; Morabito, J. V.; Hu, P.; Hsu, M.-H.; Wu, K. C. W.; **Tsung, C.-K.**, Imparting Functionality to Biocatalysts via Embedding Enzymes into Nanoporous Materials by a de novo Approach: Size-Selective Sheltering of Catalase in Metal-Organic Framework Microcrystals. *J. Am. Chem. Soc.* **2015**, *137*, 4276-4279.
51. Hu, P.; Morabito, J. V.; **Tsung, C.-K.**, Core-shell catalysts of metal nanoparticle core and metal-organic-framework shell. *ACS Catalysis* **2014**, *4*, 4409-4419.

50. Hong, D.; Yamada, Y.; Sheehan, M.; Shikano, S.; Kuo, C.-H.; Ming, T.; **Tsung, C.-K.**; Fukuzumi, S., Mesoporous Nickel Ferrites with Spinel Structure Prepared by an Aerosol-Spray-Pyrolysis Method for Photocatalytic Hydrogen Evolution. *ACS Sustainable Chemistry & Engineering* **2014**, *2*, 2588–2594.
49. Brodsky, C.N.; Young, A.P.; Ng, C.H.; Kuo, C.H.; **Tsung, C.-K.**, Electrochemically Induced Surface Metal Migration in Well-Defined Core-Shell Nanoparticles and Its General Influence on Electrocatalytic Reactions. *ACS Nano* **2014**, *8*, 9368–9378.
48. Morabito, J.V.; Chou, L.Y.; Li, Z.; Manna, C.M.; Petroff, C.A.; Kyada, R.; Palomba, J.M.; Byers, J.A.; **Tsung, C.-K.**, Molecular Encapsulation Beyond the Aperture Size Limit Through Dissociative Linker Exchange in Metal-Organic Framework Crystals. *J. Am. Chem. Soc.* **2014**, *136*, 12540–12543.
47. Hu, P.; Zhuang, J.; Chou, L.-Y.; Lee, H. K.; Ling, X. Y.; Chuang, Y.-C.; **Tsung, C.-K.**, Surfactant-Directed Atomic to Mesoscale Alignment: Metal Nanocrystals Encased Individually in Single-Crystalline Porous Nanostructures. *J. Am. Chem. Soc.* **2014**, *136*, 10561–10564.
46. Sneed, B. T.; Young, A. P.; Jalalpoor, D.; Golden, M. C.; Mao, S.; Jiang, Y.; Wang, Y.; **Tsung, C.-K.** Shaped Pd–Ni–Pt Core-Sandwich-Shell Nanoparticles: Influence of Ni Sandwich Layers on Catalytic Electrooxidations. *ACS Nano* **2014**, *8*, 7239–7250.
45. Xie, J.; Yao, X.; Madden, I. P.; Jiang, D.-E.; Chou, L.-Y.; **Tsung, C.-K.**; Wang, D. Selective Deposition of Ru Nanoparticles on TiSi₂ Nanonet and Its Utilization for Li₂O₂ Formation and Decomposition. *J. Am. Chem. Soc.* **2014**, *136*, 8903–8906.
44. Zhuang, J.; Kuo, C. H.; Chou, L. Y.; Liu, D. Y.; Weerapana, E.; **Tsung, C.-K.** Optimized Metal-Organic-Framework Nanospheres for Drug Delivery: Evaluation of Small-Molecule Encapsulation. *ACS Nano* **2014**, *8*, 2812–2819.
43. Sun, X. L.; Dai, R.; Chen, J. J.; Zhou, W.; Wang, T. Y.; Kost, A. R.; **Tsung, C.-K.**; An, Z. S. Enhanced thermal stability of oleic-acid-capped PbS quantum dot optical fiber amplifier. *Optics Express* **2014**, *22*, 519–524.
42. Jiang, Y.; Wang, Y.; Zhang, Y. Y.; Zhang, Z. F.; Yuan, W. T.; Sun, C. H.; Wei, X.; Brodsky, C. N.; **Tsung, C.-K.**; Li, J. X.; Zhang, X. F.; Mao, S. X.; Zhang, S. B.; Zhang, Z. Direct observation of Pt nanocrystal coalescence induced by electron-excitation-enhanced van der Waals interactions. *Nano Res.* **2014**, *7*, 308–314.
41. Shieh, F.-K.; Hsiao, C.-T.; Kao, H.-M.; Sue, Y.-C.; Lin, K.-W.; Wu, C.-C.; Chen, X.-H.; Wan, L.; Hsu, M.-H.; Hwu, J. R.; **Tsung, C.-K.**; Wu, K. C. W. Size-adjustable annular ring-functionalized mesoporous silica as effective and selective adsorbents for heavy metal ions. *RSC Advances* **2013**, *3*, 25686–25689.
40. Sneed, B. T.; Brodsky, C. N.; Kuo, C. H.; Lamontagne L. K.; Jiang, Y.; Wang, Y.; **Tsung, C.-K.**, Nanoscale-Phase-Separated Pd-Rh Boxes Synthesized via Metal Migration: An Archetype for Studying Lattice Strain Effects in Catalysis. *J. Am. Chem. Soc.* **2013**, *135*, 14691.
39. Kuo, C. H.; Lamontagne, L. K.; Brodsky, C. N.; Chou, L. Y.; Zhuang, J.; Sneed, B. T.; Sheehan, M. K.; Tsung, C. K. The Effect of Lattice Strain on the Catalytic Properties of Pd Nanocrystals. *ChemSusChem* **2013**, *6*, 1993–2000.
38. Zhang, S.; Nguyen, L.; Zhu, Y.; Zhan, S.; **Tsung, C.-K.**; Tao, F., In-Situ Studies of Nanocatalysis. *Accounts Chem. Res.* **2013**, *46*, 1731.
37. Baldyga, L. M.; Blavo, S. O.; Kuo, C. H.; **Tsung, C.-K.**; Kuhn, J. N., Size-Dependent Sulfur Poisoning of Silica-Supported Monodisperse Pt Nanoparticle Hydrogenation Catalysts. *ACS Catalysis* **2012**, *2*, 2626–2629.
36. Sneed, B. T.; Kuo, C. H.; Brodsky, C. N.; **Tsung, C.-K.**, Iodide-Mediated Control of Rhodium Epitaxial Growth on Well-Defined Noble Metal Nanocrystals: Synthesis, Characterization, and Structure-Dependent Catalytic Properties. *J. Am. Chem. Soc.* **2012**, *134*, 18417–18426.
35. Kuo, C. H.; Tang, Y.; Chou, L. Y.; Sneed, B. T.; Brodsky, C. N.; Zhao, Z. P.; **Tsung, C.-K.**, Yolk-Shell Nanocrystal@ZIF-8 Nanostructures for Gas-Phase Heterogeneous Catalysis with Selectivity Control. *J. Am. Chem. Soc.* **2012**, *134*, 14345–14348.
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34. Yamada, Y.; **Tsung, C.-K.**; Huang, W.; Huo, Z. Y.; Habas, S. E.; Soejima, T.; Aliaga, C. E.; Somorjai, G. A.; Yang, P. D., Nanocrystal bilayer for tandem catalysis. *Nat. Chem.* **2011**, *3* (5), 372.
33. Huang, Y.; Shi, Q. H.; **Tsung, C.-K.**; Gunawardena, H. P.; Xie, L.; Yu, Y. B.; Liang, H. J.; Yang, P. Y.; Stucky, G. D.; Chen, X. A., An optimized magnetite microparticle-based phosphopeptide enrichment strategy for identifying multiple phosphorylation sites in an immunoprecipitated protein. *Anal. Biochem.* **2011**, *409* (2), 301.
32. Feng, L.; Hoang, D. T.; **Tsung, C.-K.**; Huang, W. Y.; Lo, S. H. Y.; Wood, J. B.; Wang, H. T.; Tang, J. Y.; Yang, P. D., Catalytic Properties of Pt Cluster-Decorated CeO₂ Nanostructures. *Nano Res.* **2011**, *4* (1), 61.
31. Aliaga, C.; **Tsung, C.-K.**; Alayoglu, S.; Komvopoulos, K.; Yang, P. D.; Somorjai, G. A., Sum Frequency Generation Vibrational Spectroscopy and Kinetic Study of 2-Methylfuran and 2,5-Dimethylfuran Hydrogenation over 7 nm Platinum Cubic Nanoparticles. *J. Phys. Chem. C* **2011**, *115* (16), 8104.
30. Witham, C. A.; Huang, W. Y.; **Tsung, C.-K.**; Kuhn, J. N.; Somorjai, G. A.; Toste, F. D., Converting homogeneous to heterogeneous in electrophilic catalysis using monodisperse metal nanoparticles. *Nat. Chem.* **2010**, *2* (1), 36.
29. Tao, F.; Grass, M. E.; Zhang, Y. W.; Butcher, D. R.; Aksoy, F.; Aloni, S.; Altoe, V.; Alayoglu, S.; Renzas, J. R.; **Tsung, C.-K.**; Zhu, Z. W.; Liu, Z.; Salmeron, M.; Somorjai, G. A., Evolution of Structure and Chemistry of Bimetallic Nanoparticle Catalysts under Reaction Conditions. *J. Am. Chem. Soc.* **2010**, *132* (25), 8697.
28. Kliewer, C. J.; Aliaga, C.; Bieri, M.; Huang, W. Y.; **Tsung, C.-K.**; Wood, J. B.; Komvopoulos, K.; Somorjai, G. A., Furan Hydrogenation over Pt(111) and Pt(100) Single-Crystal Surfaces and Pt Nanoparticles from 1 to 7 nm: A Kinetic and Sum Frequency Generation Vibrational Spectroscopy Study. *J. Am. Chem. Soc.* **2010**, *132* (37), 13088.
27. Hung, L. I.; **Tsung, C.-K. (Equal Contribution)**; Huang, W. Y.; Yang, P. D., Room-Temperature Formation of Hollow Cu₂O Nanoparticles. *Adv. Mater.* **2010**, *22* (17), 1910.
26. Huang, W. Y.; Liu, J. H. C.; Alayoglu, P.; Li, Y. M.; Witham, C. A.; **Tsung, C.-K.**; Toste, F. D.; Somorjai, G. A., Highly Active Heterogeneous Palladium Nanoparticle Catalysts for Homogeneous Electrophilic Reactions in Solution and the Utilization of a Continuous Flow Reactor. *J. Am. Chem. Soc.* **2010**, *132* (47), 16771.
25. **Tsung, C.-K.**; Kuhn, J. N.; Huang, W. Y.; Aliaga, C.; Hung, L. I.; Somorjai, G. A.; Yang, P. D., Sub-10 nm Platinum Nanocrystals with Size and Shape Control: Catalytic Study for Ethylene and Pyrrole Hydrogenation. *J. Am. Chem. Soc.* **2009**, *131* (16), 5816.

24. Kuhn, J. N.; **Tsung, C.-K. (Equal Contribution)**; Huang, W.; Somorjai, G. A., Effect of organic capping layers over monodisperse platinum nanoparticles upon activity for ethylene hydrogenation and carbon monoxide oxidation. *J. Catal.* **2009**, *265* (2), 209.
23. Joo, S. H.; Park, J. Y.; **Tsung, C.-K.**; Yamada, Y.; Yang, P. D.; Somorjai, G. A., Thermally stable Pt/mesoporous silica core-shell nanocatalysts for high-temperature reactions. *Nat. Mater.* **2009**, *8* (2), 126.
22. Huo, Z. Y.; **Tsung, C.-K.**; Huang, W. Y.; Fardy, M.; Yan, R. X.; Zhang, X. F.; Li, Y. D.; Yang, P. D., Self-Organized Ultrathin Oxide Nanocrystals. *Nano Lett.* **2009**, *9* (3), 1260.
21. Aliaga, C.; Park, J. Y.; Yamada, Y.; Lee, H. S.; **Tsung, C.-K.**; Yang, P. D.; Somorjai, G. A., Sum Frequency Generation and Catalytic Reaction Studies of the Removal of Organic Capping Agents from Pt Nanoparticles by UV-Ozone Treatment. *J. Phys. Chem. C* **2009**, *113* (15), 6150.
20. **Tsung, C.-K.**; Fan, J.; Zheng, N. F.; Shi, Q. H.; Forman, A. J.; Wang, J. F.; Stucky, G. D., A General Route to Diverse Mesoporous Metal Oxide Submicrospheres with Highly Crystalline Frameworks. *Angew. Chem.-Int. Edit.* **2008**, *47* (45), 8682.
19. Li, L.; **Tsung, C.-K.**; Yang, Z.; Stucky, G. D.; Sun, L. D.; Wang, J. F.; Yan, C. H., Rare-earth-doped nanocrystalline Titania microspheres emitting luminescence via energy transfer. *Adv. Mater.* **2008**, *20* (5), 903.
18. Li, L.; **Tsung, C.-K.**; Ming, T.; Sun, Z. H.; Ni, W. H.; Shi, Q. H.; Stucky, G. D.; Wang, J. F., Multifunctional Mesostructured Silica Microspheres from an Ultrasonic Aerosol Spray. *Adv. Funct. Mater.* **2008**, *18* (19), 2956.
17. Kuhn, J. N.; Huang, W. Y.; **Tsung, C.-K.**; Zhang, Y. W.; Somorjai, G. A., Structure Sensitivity of Carbon-Nitrogen Ring Opening: Impact of Platinum Particle Size from below 1 to 5 nm upon Pyrrole Hydrogenation Product Selectivity over Monodisperse Platinum Nanoparticles Loaded onto Mesoporous Silica. *J. Am. Chem. Soc.* **2008**, *130* (43), 14026.
16. Huo, Z. Y.; **Tsung, C.-K.**; Huang, W. Y.; Zhang, X. F.; Yang, P. D., Sub-two nanometer single crystal Au nanowires. *Nano Lett.* **2008**, *8* (7), 2041.
15. Huang, W.; Kuhn, J. N.; **Tsung, C.-K.**; Zhang, Y.; Habas, S. E.; Yang, P.; Somorjai, G. A., Dendrimer templated synthesis of one nanometer Rh and Pt particles supported on mesoporous silica: Catalytic activity for ethylene and pyrrole hydrogenation. *Nano Lett.* **2008**, *8* (7), 2027.
14. Galusha, J. W.; **Tsung, C.-K. (Equal Contribution)**; Stucky, G. D.; Bartl, M. H., Optimizing sol-gel infiltration and processing methods for the fabrication of high-quality planar Titania inverse opals. *Chem. Mat.* **2008**, *20* (15), 4925.
13. Fan, J.; Boettcher, S. W.; **Tsung, C.-K.**; Shi, Q.; Schierhorn, M.; Stucky, G. D., Field-directed and confined molecular assembly of mesostructured materials: Basic principles and new opportunities. *Chem. Mat.* **2008**, *20* (3), 909.
12. Shi, Q. H.; An, Z. S.; **Tsung, C.-K.**; Liang, H. J.; Zheng, N. F.; Hawker, C. J.; Stucky, G. D., Ice-templating of core/shell microgel fibers through 'Bricks-and-Mortar' assembly. *Adv. Mater.* **2007**, *19* (24), 4539.
11. Kou, X. S.; Zhang, S. Z.; Yang, Z.; **Tsung, C.-K.**; Stucky, G. D.; Sun, L. D.; Wang, J. F.; Yan, C. H., Glutathione- and cysteine-induced transverse overgrowth on gold nanorods. *J. Am. Chem. Soc.* **2007**, *129* (20), 6402.
10. Kou, X. S.; Zhang, S. Z.; **Tsung, C.-K.**; Yang, Z.; Yeung, M. H.; Stucky, G. D.; Sun, L. D.; Wang, J. F.; Yan, C. H., One-step synthesis of large-aspect-ratio single-crystalline gold nanorods by using CTPAB and CTBAB surfactants. *Chem.-Eur. J.* **2007**, *13* (10), 2929.
9. Kou, X. S.; Ni, W. H.; **Tsung, C.-K.**; Chan, K.; Lin, H. Q.; Stucky, G. D.; Wang, J. F., Growth of gold bipyramids with improved yield and their curvature-directed oxidation. *Small* **2007**, *3* (12), 2103.
8. Boettcher, S. W.; Fan, J.; **Tsung, C.-K.**; Shi, Q. H.; Stucky, G. D., Harnessing the sol-gel process for the assembly of non-silicate mesostructured oxide materials. *Accounts Chem. Res.* **2007**, *40* (9), 784.
7. An, Z. S.; Shi, Q. H.; Tang, W.; **Tsung, C.-K.**; Hawker, C. J.; Stucky, G. D., Facile RAFT precipitation polymerization for the microwave-assisted synthesis of well-defined, double hydrophilic block copolymers and nanostructured hydrogels. *J. Am. Chem. Soc.* **2007**, *129* (46), 14493.
6. **Tsung, C.-K.**; Kou, X. S.; Shi, Q. H.; Zhang, J. P.; Yeung, M. H.; Wang, J. F.; Stucky, G. D., Selective shortening of single-crystalline gold nanorods by mild oxidation. *J. Am. Chem. Soc.* **2006**, *128* (16), 5352.
5. **Tsung, C.-K.**; Hong, W. B.; Shi, Q. H.; Kou, X. S.; Yeung, M. H.; Wang, J. F.; Stucky, G. D., Shape- and orientation-controlled gold nanoparticles formed within mesoporous silica nanofibers. *Adv. Funct. Mater.* **2006**, *16* (17), 2225.
4. Ostomel, T. A.; Shi, Q. H.; **Tsung, C.-K.**; Liang, H. J.; Stucky, G. D., Spherical bioactive glass with enhanced rates of hydroxyapatite deposition and hemostatic activity. *Small* **2006**, *2* (11), 1261.
3. Kou, X. S.; Zhang, S. Z.; **Tsung, C.-K.**; Yeung, M. H.; Shi, Q. H.; Stucky, G. D.; Sun, L. D.; Wang, J. F.; Yan, C. H., Growth of gold nanorods and bipyramids using CTEAB surfactant. *J. Phys. Chem. B* **2006**, *110* (33), 16377.
2. Wang, J. F.; **Tsung, C.-K.**; Hayward, R. C.; Wu, Y. Y.; Stucky, G. D., Single-crystal mesoporous silica ribbons. *Angew. Chem.-Int. Edit.* **2005**, *44* (2), 332.
1. Wang, J. F.; **Tsung, C.-K.**; Hong, W. B.; Wu, Y. Y.; Tang, J.; Stucky, G. D., Synthesis of mesoporous silica nanofibers with controlled pore architectures. *Chem. Mat.* **2004**, *16* (24), 5169.

PRESENTATIONS (Selected)

37. **C.-K. Tsung**, "Mesoporous Metal Oxides Prepared by an Aerosol-Spray-Pyrolysis Method for Photocatalytic", invited talk, 249th ACS National Meeting, March, 2015.
36. **C.-K. Tsung**, "Metal-Organic Framework Coated Catalysts", invited talk, 10th International Symposium for Chinese Inorganic Chemists, December, 2014.
35. **C.-K. Tsung**, "Metal-Organic Framework Coated Nanoparticles", invited talk, Utah University, December, 2014.
34. **C.-K. Tsung**, "Metal-Organic Framework Coated Nanoparticles: A New Way to Control Heterogeneous Catalysis", invited talk, UC Berkeley, September, 2014.

33. **C.-K. Tsung**, “Shaped Core-Sandwich-Shell Nanoparticles: Synthesis and Influence of Sandwich Layers on Electrooxidation”, invited talk, 248th ACS National Meeting, August, 2014.
 32. **C.-K. Tsung**, “A general route to diverse mesoporous metal oxide spheres”, invited talk, 248th ACS National Meeting, August, 2014.
 31. **C.-K. Tsung**, “Metal-Organic Framework Controlled Catalysis: Synthesis of Well-defined Active Cages”, invited talk, 248th ACS National Meeting, August, 2014.
 30. **C.-K. Tsung**, “Core-Shell Nanoparticles: The Molecular-Level Design of Active Sites in Heterogeneous Catalysts”, poster presentation and discussion leader at GRC - Noble Metal Nanoparticles, June, 2014.
 29. **C.-K. Tsung**, “The effect of surface lattice strain in reactions catalyzed by core-shell nanoparticles”, invited talk at Iowa State University, February, 2014.
 28. **C.-K. Tsung**, “The effect of surface lattice strain in electrochemical oxidation catalyzed by Au-PdPt core-shell nanoparticles”, invited oral presentation, ACS, Indianapolis, IN, August, 2013.
 27. **C.-K. Tsung**, “Lattice-Governed Electrochemical catalysis: Pd-Rh Nanoboxes Synthesized via Control of Metal Migration”, oral presentation, ACS, Indianapolis, IN, August, 2013.
 26. **C.-K. Tsung**, “Nanopore-governed heterogeneous catalysis: designing selective reaction cavities on metal surfaces”, oral presentation, ACS, Indianapolis, IN, August, 2013.
 25. **C.-K. Tsung**, “Encapsulation of Small Molecules and Nanoparticles in MOFs for Drug Delivery and Catalysis”, poster presentation and discussion leader at GRC - Nanoporous Materials & Their Applications, August, 2013.
 24. **C.-K. Tsung**, “Nanopore Modulated Catalytic Chemistry”, invited talk at 8th Sino-US Nano Forum, June, 2013.
 23. **C.-K. Tsung**, “Atomic-Level Design of Heterogeneous Catalysts”, invited talk at University of Trento, Italy April, 2013.
 22. **C.-K. Tsung**, “Iodide-mediated control of rhodium epitaxial growth on well-defined noble metal nanocrystals: Synthesis, characterization, and structure-dependent catalytic properties”, oral presentation, ACS, New Orleans, April, 2013.
 21. **C.-K. Tsung**, “Core-shell and yolk-shell nanocrystal@MOF nanostructures for gas phase heterogeneous catalysis with selectivity control”, oral presentation, ACS, New Orleans, April, 2013.
 20. **C.-K. Tsung**, “Atomic-Level Design of Heterogeneous Catalysis by Using Colloidal Chemistry Synthesis” invited talk at Osaka University, Japan, March 2013.
 19. **C.-K. Tsung**, “Rational design of heterogeneous catalysts by using colloidal synthesis”, invited talk at UniCat Colloquium (Technische Universität Berlin, Department of Chemistry), Dec 2012.
 18. **C.-K. Tsung**, “Octahedral PdPt Alloy and Au@Pd, Au@PdPt Core-Shell NPs for Electrochemical Energy”, poster presentation at GRC - Noble Metal Nanoparticles, June 2012.
 17. **C.-K. Tsung**, “Nanopore Modulated Catalytic Chemistry: Metal Nanoparticles with Nanoporous Shell for Heterogeneous Catalysis”, invited talk at 7th Sino-US Nano Forum, June 2012.
 16. **C.-K. Tsung**, “Nanocrystal@Metal-Organic-Framework Nanostructures for Gas Phase Heterogeneous Catalysis”, invited talk at Shanghai Jiao Tong University, China, June 2012.
 15. **C.-K. Tsung**, “Nanocrystal@Metal-Organic-Framework Nanostructures for Gas Phase Heterogeneous Catalysis”, invited talk at Tsinghua University, China, May 2012.
 14. **C.-K. Tsung**, “Catalytic Reactions on Microporous Core-Shell Nanostructures”, invited talk at Tufts University, November 2011.
 13. **C.-K. Tsung**, “Pt-Pd Nanocrystals with Morphology Control: Electrochemistry and Gas Phase Heterogeneous Catalysis”, invited talk at University of Massachusetts at Boston, September 2011.
 12. **C.-K. Tsung**, “Nanoparticle Catalysts with Microporous and Mesoporous Shell”, poster presentation at GRC - Nanoporous Materials & Their Applications, August 2011.
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11. **C.-K. Tsung**, “Catalytic Study of Pt and Pt Based Alloy Nanocrystals with Morphology Control”, invited talk at Institute of Materials Research and Engineering, Singapore, August 2009.
 10. **C.-K. Tsung**, “Morphology controlled metal nanocrystals with for catalysis study” invited talk at The Research Center for Applied Sciences, Academia Sinica, Taiwan, April 2009.
 9. **C.-K. Tsung**, “Metal nanocrystals with morphology control for catalysis study” invited talk at National Tsing Hua University, Taiwan, April 2009.
 8. **C.-K. Tsung**, J.N. Kuhn, W. Huang, G.A. Somorjai, P. Yang, “Platinum nanocrystals smaller than 10 nm with size and shape control: A study of ethylene and pyrrole hydrogenation”, oral talk at Spring 2009 ACS Meeting, Salt Lake City, UT, March 2009.
 7. **C.-K. Tsung**, J.N. Kuhn, W. Huang, G.A. Somorjai, P. Yang, “Pyrrole hydrogenation over size and shape controlled platinum nanocrystals”, poster and Sci-Mix, Spring ACS Meeting, Salt Lake City, UT, March 2009.
 6. **C.-K. Tsung**, J.N. Kuhn, W. Huang, G.A. Somorjai, “Catalytic activity study of platinum nanoparticles loaded on different supports” poster, 5th Annual University of California Symposium on Surface Science and Its Applications, Santa Barbara, CA, June 2008.
 5. **C.-K. Tsung**, J. F. Wang, G. D. Stucky, “Cetyltrialkylammonium bromide mediated growth of gold nano-structures”, oral talk at Spring 2007 MRS Meeting.
 4. **C.-K. Tsung**, J. F. Wang, G. D. Stucky, “One-step synthesis of large-aspect-ratio gold nanostructures using cetyltrialkylammonium bromide surfactants”, oral talk at 233rd ACS National Meeting (2007).
 3. **C.-K. Tsung**, J. F. Wang, G. D. Stucky, “Synthesis of gold Nanorods with precisely controlled surface plasmon resonance wavelengths”, oral talk at Spring 2006 MRS Meeting.
 2. **C.-K. Tsung**, J. F. Wang, G. D. Stucky, “Structure-Selective Synthesis of Mesoporous Silica Nanofibers”, poster presented at 5th International Mesostructured Materials Symposium (2006).
 1. **C.-K. Tsung**, M. H. Bartl, E. L. Hu, G. D. Stucky, “Molecular assembly of functional titania-based nanostructured composites”, poster

presented at BiMat/NASA REVIEW meeting (2005).

SERVICES

- Organizer of American Chemical Society Meetings
- Organizer of Materials Research Society Conferences
- Discussion Leader of Gordon Research Conference
- Host of University Lecture of Boston College 2012
- Faculty Search Committee of Boston College
- Physical Chemistry Seminar Committee of Boston College
- Graduate Admissions Committee of Boston College
- Academic Advisor of Undergraduate Students of Boston College

ACTIVITIES AND MEMBERSHIPS

- Member of the Materials Research Society [2005-present]
- Member of the American Chemical Society [2005-present]
- Member of the American Institute of Chemical Engineers [2009-present]

GRANT:

- Grants:
 - ACS-PRF: "Selectivity control of heterogeneous catalysis: designing selective reaction cavities on well-defined metal surfaces", \$100,000, 09/01/2013-08/31/2015.
 - Toyota TRI-NA: "Design and synthesis of metal organic frameworks (MOFs) for automotive applications", \$439,600, 06/01/2015 - 03/01/2020.
 - Boston College-URE: "Nanoparticle and nanoporous catalysts" \$70,000, 09/01/2010-09/01/2016.
 - BC-KAUST Postdoctoral Research: "Conductive MOFs synthesis" \$100,000, 09/01/2015-09/01/2017.
 - Boston College-IIF: "*in situ* FTIR spectroscopy for heterogeneous catalysis" \$50,000.
 - Boston College-Graduate Student Funding: "Selectivity control of heterogeneous catalysis" \$60,000.
- Pending Current Grants:
 - ECS Young Investigator Fellowship: 1 year, \$ 49,679.
 - NSF-DMR-CAREER: "Design and Synthesis of Shaped Core-Sandwich-Shell Nanostructures: A Platform for Studying Lattice Strain Generated by Non-Precious Metals" \$736,100.
 - NSF-CHE-Regular: "Metal-organic-framework coated nanoparticles: a new way to control heterogeneous catalysis" \$431,520.
 - DTRA-14-CHEM-BIO-BAA: "Programmable Multicomponent Artificial Enzymes" \$700,000.
 - Shell-GameChanger: "Programmable Multicomponent Artificial Enzymes" \$100,000.