ONE-PAGE SUMMARY

Zhenmeng Peng, Ph.D.

Education:

Postdoc (2010 – 2012) University of California at Berkeley; Ph.D. (2010) University of Rochester; M.S. (2005) and B.S. (2002) University of Science and Technology of China

Fields of Research Interests:

Electrocatalysis and catalysis; Chemical and electrochemical reaction engineering; Sustainable and renewable energy; C1 chemical conversion; Advanced materials synthesis and applications

Current Position:

Associate Professor, Department of Chemical and Biomolecular Engineering, The University of Akron, Akron, OH, United States

Publications:

- *Journal Papers:* 79 (citation: 5790, h-index: 37, i10-index: 60, from Google Scholar on 07/23/2019)
- *Book Chapters:* 3
- *Patents:* 8
- *Invited Seminars and Conference Presentations:* 55

Sponsored Research Projects:

- *~$1.5M* for *20 projects* funded by NSF, NASA, ODSA, Toyota, UA, etc.

Major Subjects Taught:

- *Chemical Reaction Engineering (Graduate Level)*
- *Chemical Reaction Engineering (Undergraduate Level)*
- *Heterogeneous Catalysis*
- *Chemical Engineering Lab*

Supervisees:

Summary	***Total***	***Completed***	***In Progress***
Postdoc	1	0	1
Ph.D. Students	9	4	5
M.S. Students	3	3	0
B.S. Students	7	6	1
Visiting Scholars/Students	8	8	0

Major Professional Services:

- *President* (2016 - 2018) and *President-Elect* (2014 - 2016) of Pittsburgh-Cleveland Catalysis Society (PCCS)
- *Organizer* of PCCS Annual Meetings (09/2016, 05/2017)
- *Chair* and *Co-Chair* of AICHE, NAM, MS&T and ACS-SAS-MSNO symposiums
- *Review Editor* of *Frontiers in Chemistry*
- *Guest Editor* of *Catalysts*
- *Reviewer* for DOE, NSF and ACS-PRF funding agencies and for 20+ journals

Major Honors and Awards:

- *Firestone Research Fellowship*, The University of Akron, 2013 & 2017
- *FRC Faculty Research Fellowship*, The University of Akron, 2014, 2016 & 2019
- *Chinese Government Award for Outstanding Self-Financed Students Abroad*, 2009
- *Leon Huntington Hooker Fellowship*, University of Rochester, 2009
- *Presidential Award*, Chinese Academy of Science, 2005

Zhenmeng Peng, Ph.D.

CONTACT

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Google Scholar: http://scholar.google.com/citations?user=5qct2C8AAAAJ&hl=en

RESEARCH INTERESTS

- electrocatalysis, catalysis
- Chemical and electrochemical reaction engineering
- Sustainable and renewable energy generation
- C1 chemical conversion
- Advanced materials synthesis and applications

PROFESSOIONAL EXPERIENCE

THE UNIVERSITY OF AKRON — AKRON, OH
Associate Professor — 08/2018 – present

THE UNIVERSITY OF AKRON — AKRON, OH
Assistant Professor — 08/2012 – 08/2018

UNIVERSITY OF CALIFORNIA AT BERKELEY — BERKELEY, CA
Postdoctoral Scholar (Mentor: Prof. Alexis T. Bell) — 04/2010 - 07/2012

EDUCATION

UNIVERSITY OF ROCHESTER — ROCHESTER, NY
Ph.D in Chemical Engineering (Advisor: Prof. Hong Yang) — 03/2010
Dissertation: "Platinum Alloy Nanoparticles: Composition, Shape, Structure and Electrocatalytic Property" (http://hdl.handle.net/1802/12397)

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA (USTC) — HEFEI, CHINA
M.S. in Materials Science and Engineering — 06/2005
B.S. in Materials Science and Engineering — 06/2002

RESEARCH EXPERIENCES

THE UNIVERSITY OF AKRON — AKRON, OH
Department of Chemical and Biomolecular Engineering — 08/2012 - Present

- Development of cost-effective, active and durable electrocatalysts for oxygen reduction reaction (ORR, targeted for PEM fuel cell applications) and oxygen evolution reaction (OER, targeted for water electrolyzer applications).
- Development of electrode materials for efficient, high-capacity, low-cost electrochemical desalination.
- Exploration of new catalyst to realize CO_2 hydrogenation to methanol and dimethyl ether under mild condition.

- Exploration of active and selective catalysts for CO preferential oxidation (PROX) reaction.
- Identification of catalysis descriptors for metals and metal oxides and establishment of the relationships with the activity property.
- Mechanistic studies of selective conversion of light alkane on catalyst surface.

UNIVERSITY OF CALIFORNIA AT BERKELEY BERKELEY, CA
Department of Chemical and Biomolecular Engineering 04/2010 – 07/2012
- Mechanistic understanding of coking formation mechanism on Pt-containing bimetallic catalysts in light alkane dehydrogenation.

UNIVERSITY OF ROCHESTER ROCHESTER, NY
Department of Chemical Engineering 2005 - 2010
- Development of a selective electrochemical dissolution approach for making heterogeneous Pt-metal (M = Ag, Cu) alloy structures with controlled surface composition.
- Preparation of Pt-on-metal (M = Ag, Au, Cu, Pd) nanoparticles and their derived structures, and study of their electrocatalytic properties in oxygen reduction reaction (ORR).
- Exploration of "composition-forbidden" PtM (M=Ag, Au) alloy nanoparticles as a new group of electrocatalysts in electro-oxidation of methanol (MOR) and formic acid (FAOR).

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA HEFEI, CHINA
Hefei National Laboratory for Physical Sciences at the Microscale 2002 - 2005
- Investigation of the formation mechanism of magnetite nanostructures via beta-FeOOH reduction.

TEACHING RECORD

Semester	*Course Name*	*Course #*	*Student #*	*Evaluation*
2019 Spring	Heterogeneous Catalysis (UG/G)	4200:680:001	10	4.769
2019 Spring	Chemical Reaction Engineering (UG)	4200:330:001	56	4.076
2018 Fall	Chemical Reaction Engineering (G)	4200:605:801	19	4.632
2018 Spring	Heterogeneous Catalysis (UG/G)	4200:680:001	6	4.438
2018 Spring	Chemical Reaction Engineering (UG)	4200:330:001	67	3.915
2017 Fall	Chemical Reaction Engineering (G)	4200:605:801	17	4.599
2017 Spring	Heterogeneous Catalysis (UG/G)	4200:680:001	7	4.885
2017 Spring	Chemical Reaction Engineering (UG)	4200:330:001	69	4.153
2016 Fall	Chemical Reaction Engineering (G)	4200:605:801	15	4.671
2016 Spring	Heterogeneous Catalysis (UG/G)	4200:680:001	5	4.857
2016 Spring	Chemical Reaction Engineering (UG)	4200:330:001	44	4.569
2015 Fall	Chemical Reaction Engineering (G)	4200:605:801	19	4.652
2015 Spring	Heterogeneous Catalysis (UG/G)	4200:680:001	7	5.000
2015 Spring	Chemical Reaction Engineering (UG)	4200:330:001	35	3.878
2014 Fall	Chemical Reaction Engineering (G)	4200:605:801	25	4.627
2014 Spring	Chemical Reaction Engineering (UG)	4200:330:001	47	3.835
2013 Fall	Chemical Engineering Seminar (G)	4200:791:001	44	4.484
2013 Fall	Chemical Reaction Engineering (G)	4200:605:801	24	4.415

2013 Spring	Chemical Engineering Seminar (G)	4200:791:001	34	4.336
2013 Spring	Chemical Engineering Lab (UG)	4200:360:011	30	3.560
2012 Fall	Chemical Reaction Engineering (G)	4200:605:801	26	4.474

FUNDED RESEARCH PROJECTS (total support: $1,516,221)

	Project Title	***Sponsor***	***Role***	***Amount***
20.	Active and Durable Alkaline Water Electrolyzer for Cost-effective and Renewable Hydrogen Production (06/2019 – 11/2019)	NSF	PI	$50,000
19.	Carbon Dioxide Reduction to Dimethyl Ether as Diesel Alternative (05/2019 – 04/2020)	FRC Research Fellowship, UA	PI	$10,000
18.	Electrochemical Water Energy (10/2018 – 09/2019)	UA NSF I-Corps Sites program	PI	$2,500
17.	Cascade Adsorption Mechanism for Overcoming Activation Energy Barrier in Oxygen Reduction Reaction (annually renewed, 03/2019 – 02/2020)	Toyota Motor Engineering & Manufacturing North America Inc.	PI	$90,000
16.	Solid-State Synthesis and Characterization of Octahedral Pt-based Alloys on Mesoporous Carbon Support (annually renewed, 03/2019 – 02/2020)	Toyota Motor Engineering & Manufacturing North America Inc.	PI	$50,000
15.	Cascade Adsorption Mechanism for Overcoming Activation Energy Barrier in Oxygen Reduction Reaction (03/2018 – 02/2019)	Toyota Motor Engineering & Manufacturing North America Inc.	PI	$50,000
14.	Solid-State Synthesis and Characterization of Octahedral Pt-based Alloys on Mesoporous Carbon Support (annually renewed, 03/2018 – 02/2019)	Toyota Motor Engineering & Manufacturing North America Inc.	PI	$95,000
13.	Solid-State Synthesis and Characterization of Octahedral Pt-based Alloys on Mesoporous Carbon Support (09/2017 – 02/2018)	Toyota Motor Engineering & Manufacturing North America Inc.	PI	$30,000
12.	Mechanistic Insights into Covalent and Ionic Contributions to Molecular Adsorption and Reaction on Transition Metals (Award No.: 1665265, 08/2017 – 07/2020)	National Science Foundation	PI	$311,847
11.	Data-Assisted Discovery of Active and Durable Oxygen Reduction Electrocatalyst for Fuel Cell Application (05/2017 – 04/2018)	Firestone Research Fellowship, UA	PI	$10,000
10.	Pt-based Catalyst Materials for Activity and Stability Evaluation for Oxygen Reduction Reaction (03/2017 – 02/2018)	Toyota Motor Engineering & Manufacturing North America Inc.	PI	$10,000
9.	Catalyst Development for Low-Cost CO_2 Reduction to Methanol (Award No.: R-16-04, 09/2016 – 12/2018)	Ohio Development Services Agency	PI	$194,259
8.	Renewable Hydrogen Production via Photocatalytic Water Splitting (05/2016 – 04/2017)	FRC Research Fellowship, UA	PI	$10,000

7.	Functionalization of 2D Mesoporous Graphene Framework and Applications (International project, 01/2016 – 12/2017)	Senior Visiting Scholarship, Fudan University	PI	$13,115
6.	Safe, Highly Energy and Performance Sodium-Oxygen Battery (04/2015 – 08/2016)	NASA Glenn Research Center	Co-PI	$15,000 (Co-PI's share)
5.	Scale-Up Technology Development for Low-Cost and Long-Durability Catalytic Electrodes in PEMFCs (08/2015 – 07/2016)	Bing Energy International LLC	PI	$80,000
4.	Research Nitrogen-Functionalized Polymer-Supported Palladium Catalyst for Aqueous Phase Production of Cyclohexanone (07/2014 – 06/2015)	FRC Research Fellowship, UA	PI	$10,000
3.	Method to Produce Metal Alloy Catalysts (12/2013 – 05/2014)	NSF UA I-Corps Sites Team Program	PI	$2,500
2.	Engineering Scalable Production of Cubic Platinum/Carbon Catalysts and the Application in Electrocatalytic Oxidation of Ammonia (05/2013 – 04/2014)	Firestone Research Fellowship, UA	PI	$10,000
1.	Start-up Fund for assistant professorship (08/2012 – 06/2018)	UA	PI	$472,000

JOURNAL ARTICLES (*: Corresponding author)

1. D. Z. Wu, X. C. Shen, Y. B. Pan, L. B. Yao, **Z. M. Peng***, Advances, Challenges and Perspectives of Platinum Alloy Catalysts for Oxygen Reduction Reaction, *ChemNanoMat*, 2019, *doi: 10.1002/cnma.201900319*. (Invited Review Article)
2. F. Hu, Y. Zhang, X. C. Shen, J. Tao, X. W. Yang, Y. J. Xiong*, **Z. M. Peng***, Porous amorphous NiFeOx/NiFeP framework with dual electrocatalytic functions for water electrolysis, *Journal of Power Sources*, 2019, *428*, 76-81.
3. F. P. Yang, D. Presto, Y. B. Pan, K. Liu, L. Zhou, S. Narayanan, Y. Zhu, **Z. M. Peng**, M. D. Soucek, M. Tsige, M. D. Foster*, Proximity to Graphene Dramatically Alters Polymer Dynamics, *Macromolecules*, 2019, *52*, 5074-5085.
4. B. W. Wang, J. X. Zou, X. C. Shen, Y. C. Yang, G. Z. Hu, W. Li, **Z. M. Peng***, D. Banham*, A. G. Dong*, D. Y. Zhao, Nanocrystal supracrystal-derived atomically dispersed Mn-Fe catalysts with enhanced oxygen reduction activity, *Nano Energy*, 2019, *63*, 103851.
5. X. C. Shen, T. Nagai, F. P. Yang, L. Q. Zhou, Y. B. Pan, L. B. Yao, D. Z. Wu, Y. S. Liu, J. Feng, J. H. Guo, H. F. Jia*, **Z. M. Peng***, Dual-site cascade oxygen reduction mechanism on SnOx/Pt-Cu-Ni for promoting reaction kinetics, *Journal of the American Chemical Society*, 2019, *141*, 9463-9467.
6. F. Hu, H. Y. Wang, Y. Zhang, X. C. Shen, G. H. Zhang, Y. B. Pan, J. T. Miller, K. Wang, S. L. Zhu, X. J. Yang, C. M. Wang, X. J. Wu*, Y. J. Xiong*, **Z. M. Peng***, Designing Highly Efficient and Long-Term Durable Electrocatalyst for Oxygen Evolution by Coupling B and P into Amorphous Porous NiFe-Based Material, *Small*, 2019, *1901020*.
7. L. B. Yao, X. C. Shen, Y. B. Pan, **Z. M. Peng***, Synergy between active sites of Cu-In-Zr-O catalyst in CO2 hydrogenation to methanol, *Journal of Catalysis*, 2019, *372*, 74-85.
8. H. F. Feng, S. Y. Gao, J. Shi, L. Zhang*, **Z. M. Peng***, S. K. Cao*, Construction of 3D hierarchical porous NiCo2O4/graphene hydrogel/Ni foam electrode for high-performance supercapacitor, *Electrochimica Acta*, 2019, *299*, 116-124.
9. Y. B. Pan, X. C. Shen, L. B. Yao, A. Bentalib, J. L. Yang, J. Zeng*, **Z. M. Peng***, Competitive Transient Electrostatic Adsorption for In Situ Regeneration of Poisoned Catalyst, *ChemCatChem*, 2019, *11*, 1179-1184.

10. X. C. Shen, S. Dai, S. Y. Zhang, Z. Lu, C. L. Zhang, G. W. Graham, Y. Lei, X. Q. Pan*, **Z. M. Peng***, Oxidation-Induced Atom Diffusion and Surface Restructuring in Faceted Ternary Pt–Cu–Ni Nanoparticles, *Chemistry of Materials*, 2019, *31*, 1720-1728.
11. X. K. Kong*, **Z. M. Peng***, Low Dimensional Materials for Alkaline Oxygen Evolution Electrocatalysis, *Materials Today Chemistry*, 2019, *11*, 119-132. (Invited Review Article)
12. X. C. Shen, C. L. Zhang, S. Y. Zhang, S. Dai, G. H. Zhang, M. Y. Ge, Y. B. Pan, S. M. Sharkey, G. W. Graham, A. Hunt, I. Waluyo*, J. T. Miller*, X. Q. Pan*, **Z. M. Peng***, Deconvolution of Octahedral Pt_3Ni Nanoparticle Group Pathway from In Situ Characterizations, *Nature Communications*, 2018, *9*, 4485. (Editors' Highlight Article)
13. Y. B. Pan, X. C. Shen, L. B. Yao, A. Bentalib, **Z. M. Peng***, Active Sites in Heterogeneous Catalytic Reaction on Metal and Metal Oxide: Theory and Practice, *Catalysts*, 2018, *8*, 478. (Invited Review Article)
14. Y. B. Pan, S. Y. Hwang, X. C. Shen, J. L. Yang, J. Zeng*, M. Z. Wu*, **Z. M. Peng***, Computation-Guided Development of Platinum Alloy Catalyst for Carbon Monoxide Preferential Oxidation, *ACS Catalysis*, 2018, *8*, 5777-5786.
15. X. Zhao, X. Q. Li, Y. Yan, Y. L. Xing, S. C. Lu, L. Y. Zhao, S. M. Zhou, **Z. M. Peng***, J. Zeng*, Electrical and Structural Engineering of Cobalt Selenide Nanosheets by Mn Modulation for Efficient Oxygen Evolution, *Applied Catalysis B: Environmental*, 2018, *236*, 569-575.
16. J. F. Chen, X. C. Shen, Y. B. Pan, C. Liu, S. Y. Hwang, Q. Xu, **Z. M. Peng***, Synthesis of Freestanding Amorphous Giant Carbon Tubes with Outstanding Oil Sorption and Water Oxidation Properties, *Journal of Material Chemistry A*, 2018, *6*, 3996-4002.
17. K. W. Liu, C. L. Zhang, Y. D. Sun, G. H. Zhang, X. C. Shen, F. Zou, H. C. Zhang, Z. W. Wu, E. C. Wegener, C. J. Taubert, J. T. Miller, **Z. M. Peng***, Y. Zhu*, High-Performance Transition Metal Phosphide Alloy Catalyst for Oxygen Evolution Reaction, *ACS Nano*, 2018, *12*, 158-167.
18. P. Dai, T. T. Yan, L. Hu, Z. W. Pang, Z. W. Bao, M. Z. Wu*, G. Li, J. Fang, **Z. M. Peng***, Phase Engineering of Cobalt Hydroxides by Magnetic Fields for Enhanced Supercapacitor Performance, *Journal of Materials Chemistry A*, 2017, *5*, 19203-19209.
19. X. Zhao, P. F. Gao, Y. Yan, X. Q. Li, Y. L. Xing, H. L. Li, **Z. M. Peng***, J. L. Yang, J. Zeng*, Gold atom-decorated CoSe2 nanobelts with engineered active sites for enhanced oxygen evolution, *Journal of Materials Chemistry A*, 2017, *5*, 20202-20207.
20. H. W. Huang, K. Li, Z. Chen, L. H. Luo, Y. Q. Gu, D. Y. Zhang, C. Ma, R. Si*, J. L. Yang, **Z. M. Peng***, J. Zeng*, Achieving Remarkable Activity and Durability toward Oxygen Reduction Reaction Based on Ultrathin Rh-Doped Pt Nanowires, *Journal of the American Chemical Society*, 2017, *139*, 8152-8159.
21. X. K. Kong*, C. L. Zhang, S. Y. Hwang, Q. W. Chen*, **Z. M. Peng***, Free-Standing Holey Ni(OH)2 Nanosheets with Enhanced Activity for Water Oxidation, *Small*, 2017, *13*, 1700334.
22. X. C. Shen. S. Dai, C. L. *Zhang*, S. Y. Zhang, S. M. Sharkey, G. W. Graham, X. Q. Pan*, **Z. M. Peng***, In Situ Atomic-Scale Observation of 2D Co(OH)2 Transition at Atmospheric Pressure, *Chemistry of Materials*, 2017, *2017, 29, 4572-4579.*
23. X. C. Shen, Y. B. Pan, B. Liu, J. L. Yang, J. Zeng*, **Z. M. Peng***, More Accurately Depicting Adsorption Energy on Transition Metal using Working Function as One Additional Descriptor, *Physical Chemistry Chemical Physics*, 2017, *19*, 12628-12632. (Inside Front Cover)
24. X. Zhao, H. T. Zhang, Y. Yan, J. H. Cao, X. Q. Li, S. M. Zhou, **Z. M. Peng***, J. Zeng*, Engineering the Electrical Conductivity of Lamellar Silver-Doped Cobalt (II) Selenide Nanobelts for Enhanced Oxygen Evolution, *Angewandte Chemie International Edition*, 2017, *56*, 328-332.
25. X. K. Kong*, Q. C. Liu, C. L. Zhang, **Z. M. Peng***, Q. W. Chen*, Elemental Two-Dimensional Nanosheets beyond Graphene, *Chemical Society Reviews*, 2017, *46*, 2127-2157.
26. C. L. Zhang, X. C. Shen, Y. B. Pan, **Z. M. Peng***, A Review of Pt-Based Electrocatalysts for Oxygen Reduction Reaction, *Frontiers in Energy*, 2017, *doi:10.1007/s11708-017-0466-6*.
27. C. L. Zhang, B. W. Wang, X. C. Shen, J. W. Liu, X. K. Kong, S. C. Chuang, D. Yang, A. G. Dong*, **Z. M. Peng***, A Nitrogen-doped Ordered Mesoporous Carbon/Graphene Framework as

Bifunctional Electrocatalyst for Oxygen Reduction and Evolution Reactions, *Nano Energy*, 2016, *30, 503-510*.

28. X. K. Kong, K. Xu, C. L. Zhang, J. Dai, S. N. Oliaee, L. Y. Li, X. C. Zeng, C. Z. Wu*, **Z. M. Peng*,** Free-Standing Two-Dimensional Ru Nanosheets with High Activity toward Water Splitting, *ACS Catalysis*, 2016, *6*, 1487-1492.
29. C. L. Zhang, S. N. Oliaee, S. Y. Hwang, X. K. Kong, and **Z. M. Peng***, A generic wet impregnation method for preparing substrate-supported platinum group metal and alloy nanoparticles with controlled particle morphology, *Nano Letters*, 2016, *16*, 164-169.
30. S. Y. Hwang, E. Yurchekfrodl, C. L. Zhang, and **Z. M. Peng***, Low-Temperature Preferential Oxidation of Carbon Monoxide on Pt3Ni Alloy Nanoparticle Catalyst with Engineered Surface, *ChemCatChem*, 2016, *8,* 97-101. (VIP Paper and Front Cover)
31. X. K. Kong, X. C. Shen, C. L. Zhang, S.N. Oliaee, **Z. M. Peng***, Engineering active sites of two-dimensional MoS2 nanosheets for improving hydrogen evolution, *Inorganic Chemistry Frontiers*, 2016,*3*, 1376-1380. (Front Cover)
32. S. N. Oliaee, C. L. Zhang, S. Y. Hwang, H. M. Cheung, **Z. M. Peng*,** Hydrogen Production via Hydrazine Decomposition on Model Platinum-Nickel Nanocatalyst with Single (111) Facet, *Journal of Physical Chemistry C*, 2016, *120*, 9764-9772.
33. S. N. Oliaee, C. L. Zhang, S. Y. Hwang, H. M. Cheung, **Z. M. Peng***, Synthesis and property of a Helvingia-structured nickel nitride/nickel hydroxide nanocatalyst in hydrazine decomposition, *RSC Advances*, 2016, *6*, 39494-38498.
34. J. Wu, S. Helveg, S. Ullmann, **Z. M. Peng**, A. T. Bell*, Growth of encapsulating carbon on supported Pt nanoparticles studied by in situ TEM, *Journal of Catalysis*, 2016, *338*, 295-304.
35. Y. Q. Guo, Y. Tong, P. Z. Chen, K. Xu, J. Y. Zhao, Y. Lin, W. S. Chu, **Z. M. Peng***, C. Z. Wu*, and Y. Xie, Engineering Electronic State of Perovskite Electrocatalyst for Synergistically Enhanced Oxygen Evolution Reaction, *Advanced Materials*, 2015, *27,* 5989-5994.
36. K. Xu, P. Z. Chen, X. L. Li, Y. Tong, H. Ding, X. J. Wu, W. S. Chu*, **Z. M. Peng***, C. Z. Wu*, Y. Xie, Metallic Nickel Nitride Nanosheets Realizing Enhanced Electrochemical Water Oxidation, *Journal of the American Chemical Society*, 2015, *137,* 4119-4125.
37. C. L. Zhang, W. Sandorf, **Z. M. Peng***, Octahedral Pt2CuNi Uniform Alloy Nanoparticle Catalyst with High Activity and Promising Stability for Oxygen Reduction Reaction, *ACS Catalysis*, 2015, *5*, 2296-2300.
38. X. Zhao, S. Chen, Z. C. Fang, J. Ding, W. Sang, Y. C. Wang, J. Zhao, **Z. M. Peng***, J. Zeng*, Octahedral Pd@Pt1.8Ni Core–Shell Nanocrystals with Ultrathin PtNi Alloy Shells as Active Catalysts for Oxygen Reduction Reaction, *Journal of the American Chemical Society*, 2015, *137*, 2804-2807.
39. S. Y. Hwang, C. L. Zhang, E. Yurchekfrodl, **Z. M. Peng***, Property of Pt-Ag Alloy Nanoparticle Catalyst in Carbon Monoxide Oxidation, *Journal of Physical Chemistry C* 2014, *118,* 28739-28745.
40. C. L. Zhang, S. Y. Hwang, **Z. M. Peng***, Size-dependent oxygen reduction property of octahedral Pt-Ni nanoparticle electrocatalysts, *Journal of Materials Chemistry A* 2014, *2*, 19778-19787.
41. S. Y. Hwang, M. Z. Zhang, C. L. Zhang, B. Y. Ma, J. Zheng, **Z. M. Peng***, Carbon monoxide in controlling the surface formation of Group VIII metal nanoparticles, *Chemical Communications* 2014, *50,* 14013-14016.
42. C. L. Zhang, S. Y. Hwang, A. Trout, **Z. M. Peng***, Solid-state chemistry-enabled scalable production of octahedral Pt-Ni alloy electrocatalyst for oxygen reduction reaction, *Journal of the American Chemical Society* 2014, *136*, 7805-7808.
43. J. Wu†, **Z. M. Peng†** (Equal contribution), A. T. Bell*, Effects of composition and metal particle size on ethane dehydrogenation over PtxSn100-x/Mg(Al)O (70<x<100), *Journal of Catalysis*, 2014, *311*, 161-168.
44. J. Wu, **Z. M. Peng**, P. P. Sun, A. T. Bell*, n-butane dehydrogenation over Pt/Mg(In)(Al)O, *Applied Catalysis A: General* 2014, *470*, 208-214.

45. M. Z. Zhang, R. D. Hu, G. Z. Liang, Y. Chang, Y. Sun, **Z. M. Peng**, J. Zheng*, Structural and energetic insight into the cross-seeding amyloid assemblies of human IAPP and Rat IAPP, *Journal of Physical Chemistry B* 2014, *118*, 7026-7036.
46. C. L. Zhang, S. Y. Hwang, **Z. M. Peng***, Shape-enhanced ammonia electro-oxidation activity of cubic platinum nanocrystals catalyst made by surfactant-free synthesis, *Journal of Materials Chemistry A* 2013,*1*, 14402-14408.
47. **Z. M. Peng**, F. Somodi, S. Helveg, C. Kisielowski, P. Spect, A. T. Bell*, High-Resolution In Situ and Ex Situ TEM Studies of Graphene Formation and Growth on Pt Nanoparticles, *Journal of Catalysis*, 2012, *286*, 22-29.
48. **Z. M. Peng**, C. Kisielowski, A. T. Bell*, Surfactant-Free Preparation of Supported Cubic Platinum Nanoparticles, *Chemical Communications*, 2012, *48,* 1854-1856.
49. F. Somodi, S. Werner, **Z. M. Peng**, A. Getsoian, A. Mlinar, B. S. Yeo, A. T. Bell*, Size and Composition Control of Pt-In Nanoparticles Prepared by Seed-Mediated Growth using Bimetallic Seeds, *Langmuir*, 2012, *28*, 3345-3349.
50. F. Somodi, **Z. M. Peng**, A. Getsoian, A. T. Bell*, Effect of the Synthesis Parameters on the Size and Composition of Pt-Sn Nanoparticles Prepared by the Polyalcohol Reduction Method, *Journal of Physical Chemistry C*, 2011, *115*, 19084-19090.
51. H. J. You, **Z. M. Peng**, J. B. Wu, H. Yang*, Lattice Contracted AgPt Nanoparticles, *Chemical Communications*, 2011, *47*, 12595-12597.
52. M. Shi, H. S. Kwon, **Z. M. Peng**, A. Elder, H. Yang*, Effects of Surface Chemistry on the Generation of Reactive Oxygen Species by Copper Nanoparticles, *ACS Nano* 2012, *6*, 2157-2164.
53. **Z. M. Peng**, H. J. You, H. Yang*, An Electrochemical Approach to Pt-Surface Rich PtAg Alloy Nanostructures, *Advanced Functional Materials*, 2010, *20*, 3734-3741.
54. **Z. M. Peng**, H. J. You, J. B. Wu, H. Yang*, Electrochemical Synthesis and Catalytic Property of Sub-10 nm Platinum Cubic Nanoboxes, *Nano Letters*, 2010, *10*, 1492-1496.
55. **Z. M. Peng**, H. J. You, H. Yang*, Understanding the Composition-Dependent Formation of Platinum Silver Nanowires, *ACS Nano*, 2010, *4*, 1501-1510.
56. **Z. M. Peng**, J. B. Wu, H. Yang*, Synthesis and Oxygen Reduction Electrocatalytic Property of Platinum Hollow and Platinum-on-Silver Nanoparticles, *Chemistry of Materials*, 2010, *22*, 1098-1106.
57. J. B. Wu, J. L. Zhang, **Z. M. Peng**, S. C. Yang, F. T. Wagner, H. Yang*, Truncated Octahedral Pt_3Ni ORR Electrocatalysts, *Journal of the American Chemical Society*, 2010, *132*, 4984-4985.
58. J. B. Wu, **Z. M. Peng**, H. Yang*, Supportless Oxygen Reduction Electrocatalysts of CoCuPt Hollow Nanoparticles, *Philosophical Transactions of the Royal Society A: Mathematical, Physical & Engineering Sciences*, 2010, *368*, 4261-4274.
59. X. F. Lu, M. McKiernan, **Z. M. Peng**, E. P. Lee, H. Yang, Y. N. Xia*, Noble-Metal Nanotubes Prepared via a Galvanic Replacement Reaction Between Cu Nanowires and Aqueous $HAuCl_4$, H_2PtCl_6, or Na_2PdCl_4, *Sciences of Advanced Materials*, 2010, *2*, 413-420.
60. **Z. M. Peng**, H. Yang*, Synthesis and Oxygen Reduction Electrocatalytic Property of Pt-on-Pd Bimetallic Heteronanostructures, *Journal of the American Chemical Society*, 2009, *131*, 7542-7543.
61. **Z. M. Peng**, H. Yang*, PtAu Bimetallic Heteronanostructures Made by Post-Synthesis Modifications of Pt-on-Au Nanoparticles, *Nano Research*, 2009, *2*, 406-415.
62. P. H. C. Camargo[†], **Z. M. Peng**[†] (Equal contribution), X. M. Lu, H. Yang, Y. N. Xia*, Synthesis and Application of $RuSe_{2+\delta}$ Nanotubes as Methanol Tolerant Electrocatalysts for the Oxygen Reduction Reaction, *Journal of Material Chemistry*, 2009, *19*, 1024-1030.
63. **Z. M. Peng**, H. Yang*, Designer Platinum Nanoparticles: Shape, Composition in Alloys, Nanostructure and Electrocatalytic Property, *Nano Today*, 2009, *4*, 143-164.
64. **Z. M. Peng**, H. Yang*, Ag-Pt Alloy Nanoparticles with the Compositions in Miscibility Gap, *Journal of Solid State Chemistry*, 2008, *181*, 1646-1561.

65. E. Lee[†], **Z. M. Peng**[†] (Equal contribution), W. Chen[†], S. W. Chen, H. Yang, Y. Xia*, Electrocatalytic Properties of Pt Nanowires Supported on Pt and W Gauzes, *ACS Nano*, 2008, *2*, 2167-2173.
66. E. Formo[†], **Z. M. Peng**[†] (Equal contribution), E. Lee, X. M. Lu, H. Yang, Y. N. Xia*, Direct Oxidation of Methanol on Pt Nanostructures Supported on Electrospun Nanofibers of Anatase, *Journal of Physical Chemistry C*, 2008, *112*, 9970-9975.
67. S. C. Yang, **Z. M. Peng**, H. Yang*, Platinum Lead Nanostructures: Formation, Phase Behavior and Electrocatalytic Property, *Advanced Functional Materials*, 2008, *18*, 2745-2753.
68. E. P. Lee, **Z. M. Peng**, D. M. Cate, H. Yang, C. T. Campbell, Y. N. Xia*, Growing Pt Nanowires as a Densely Packed Array on Metal Gauze, *Journal of the American Chemical Society*, 2007, *129*, 10634-10635.
69. S. Maksimuk, S. C. Yang, **Z. M. Peng**, H. Yang*, Synthesis and Characterization of Ordered Intermetallic PtPb Nanorods, *Journal of the American Chemical Society*, 2007, *129*, 8694-8685.
70. **Z. M. Peng**, M. Z. Wu, Y. Xiong, J. Wang, Q. W. Chen*, Synthesis of Magnetite Nanorods through Reduction of Beta-FeOOH, *Chemistry Letters*, 2005, *34*, 636-637.
71. **Z. M. Peng,** J. Wang, Y. J. Huang, Q. W. Chen*, Magnetic Field-Induced Increasing of the Reaction Rates Controlled by the Diffusion of Paramagnetic Gases, *Chemical Engineering and Technology*, 2004, *27*, 1273-1276.
72. H. F. Zhu, Q. W. Chen*, H. L. Niu, **Z. M. Peng**, Q. Sun, Growth of Cuprite Nanocubes under Acidic Conditions, *Chinese Journal of Inorganic Chemistry*, 2004, *20*, 1172-1176.
73. M. Z. Wu, Y. Xiong, **Z. M. Peng**, N. Jiang, H. P. Qi, Q. W. Chen*, The Enhanced Coercivity for the Magnetite/Silica Nanocomposite at Room Temperature, *Materials Research Bulletin*, 2004, *39*, 1875-1880.
74. J. Wang, C. Zeng, **Z. M. Peng**, Q. W. Chen*, Synthesis and Magnetic Properties of $Zn_{1-x}Mn_xFe_2O_4$ Nanoparticles, *Physica B – Condensed Matter*, 2004, *349*, 124-128.
75. J. Wang, K. Zhang, **Z. M. Peng**, Q. W. Chen*, Magnetic Properties Improvement in Fe_3O_4 Nanoparticles Grown under Magnetic Fields, *Journal of Crystal Growth*, 2004, *266*, 500-504.
76. Y. Xiong, M. Z. Wu, **Z. M. Peng**, N. Jiang, Q. W. Chen*, Hydrothermal Synthesis and Characterization of $Bi_2Fe_4O_9$ Nanoparticles, *Chemistry Letters*, 2004, *33*, 502-503.
77. J. Wang, Q. W. Chen*, X. G. Li, L. Shi, **Z. M. Peng**, C. Zeng, Disappearing of the Verway Transition in Magnetite Nanoparticles Synthesized under a Magnetic Field: Implications 141 for the Origin of Charge Ordering, *Chemical Physics Letters*, 2004, *390*, 55-58.
78. J. Wang, Q. W. Chen*, B. Y. Hou, **Z. M. Peng**, Synthesis and Magnetic Properties of Single-Crystals of $MnFe_2O_4$ Nanorods, *European Journal of Inorganic Chemistry*, 2004, *6*, 1165-1168.
79. J. Wang, **Z. M. Peng**, Y. J. Huang, Q. W. Chen*, Growth of Magnetite Nanorods along its Easy-Magnetization Axis of [110], *Journal of Crystal Growth*, 2004, *263*, 616-619.

BOOK CHAPTERS

1. X. K. Kong,* **Z. M. Peng***, Inorganic Two-Dimensional Nanomaterials for Electrocatalysis, In *Inorganic Two-Dimensional Nanomaterials, C. Z. Wu (Ed.),* Royal Society of Chemistry, 2017, *Chapter 9, 241 - 265.*
2. **Z. M. Peng***, Metallic Nanostructures for Electrocatalysis, In *Metallic Nanostructures: from Controlled Synthesis to Applications, Y. J. Xiong, X. M. Lu (Ed.)*, Springer, 2015, *Chapter 7*, 205-241.
3. **Z. M. Peng**, S. C. Yang, H. Yang*, Approaches to the Synthesis and Characterization of Spherical and Anisotropic Platinum Nanomaterials, In *Metallic Nanomaterials, Challa Kumar (Ed.)*, VCH-Wiley Verlag, Weinheim, Germany, 2008, 357-401.

PATENTS

1. K. Huang, L. Q. Zhou, H. F. Jia, H. Kato, **Z. M. Peng**, A Composite Made Of Ionic Liquid And Octahedral Pt-Ni-Cu Alloy Nanoparticles For Oxygen Reduction Catalysis, Toyota TEMA-1548-A, 2019.
2. H. F. Jia, N. Tomoyuki, X. C. Shen, D. Z. Wu, **Z. M. Peng**, Cascade Adsorption Mechanism for Overcoming Activation Energy Barrier in Oxygen Reduction Reaction, Toyota TEMA-1867-A, 2019.
3. Y. B. Pan, **Z. M. Peng**, Copper-based electrode materials for fresh water production application via electrochemical water desalination, USPTO: 62/854,503, 2019.
4. Y. B. Pan, **Z. M. Peng**, Mercury-based electrode materials for chloride ion removal in water desalination application, USPTO: 62/844,332, 2019.
5. F. Hu, **Z. M. Peng**, Porous amorphous metallic electrode materials for water electrolysis application, USPTO: 62/816,475, 2018.
6. L. Q. Zhou, K. Huang, T. Nagai, H. F. Jia, H. Kato, X. C. Shen, **Z. M. Peng**, Forming nanoparticles into porous structures, USPTO: 16/139,936, 2018.
7. **Z. M. Peng**, Method for production of metal skin layer particles with controllable layer thickness, Provisional Patent, USPTO: 62/038,443, 2014.
8. **Z. M. Peng**, C. L. Zhang, S. Y. Hwang, Functional gas-assisted impregnation method for producing noble metal alloy catalysts with defined morphology, WO2015006527A1, 2013.

INVITED TALKS AND PRESENTATIONS (Underline: presenter)

1. Z. M. Peng*, Toward More Accurate Depiction of Chemical - Active Site Interactions using Catalyst Material Parameters, ACS Spring Meeting, Orlando, FL, 04/2019. (invited presentation)
2. Z. M. Peng*, Electrocatalyst Development for Active and Durable Oxygen Evolution Reaction, AICHE Annual Meeting, Pittsburgh, PA, 10/2018. (invited presentation)
3. Z. M. Peng*, Overcoming Activation Energy Barrier in Oxygen Reduction Reaction, Toyota Fuel Cell Research Workshop, Torrance, CA, 10/2018. (invited presentation)
4. Z. M. Peng*, Nitrogen-doped Ordered Mesoporous Carbon/Graphene Framework as Dual Electrocatalyst for Oxygen Reduction and Evolution Reactions, MS&T Conference, Columbus, OH, 2018. (invited presentation)
5. F. Hu, K. W. Liu, X. C. Shen, Y. B. Pan, Y. Zhu, Z. M. Peng*, Active and Durable Electrocatalyst Development for Alkaline Oxygen Evolution Reaction, AiMES Meeting, Cancun, Mexico, 10/2018.
6. Zhenmeng Peng,* Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Properties, Electrochemical Energy Science and Technology Meeting, Niagara Falls, Canada, 08/2018.
7. Zhenmeng Peng,* Research and Development of Electrocatalyst for Water Electrolysis, Anhui University, Hefei, China, 07/17/2018. (invited talk)
8. Zhenmeng Peng,* Towards Active and Durable Electrocatalyst Development for Oxygen Evolution Reaction, Fudan University, Shanghai, China, 07/12/2018. (invited talk)
9. Zhenmeng Peng,* Two-Dimensional Metal-Organic Framework Nanosheets for Electrochemical and Photoelectrochemical Water Oxidation, 2017 MS&T Conference, Pittsburgh, PA, 2017 (invited talk).
10. Changlin Zhang, Biwei Wang, Angang Dong, Zhenmeng Peng*, Nitrogen-doped Ordered Mesoporous Carbon/Graphene Framework as Dual Electrocatalyst for Oxygen Reduction and Evolution Reactions, 232nd ECS Meeting, National Harbor, MD, 2017 (oral presentation).
11. Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Properties, Zhengzhou University, Zhengzhou, China, 07/29/2017 (invited talk).
12. Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Properties, Institute of Solid State Physics, Chinese Academy of Science, Hefei, China, 07/24/2017 (invited talk).

13. Yanbo Pan, Sang Youp Hwang, Xiaochen Shen, Eric Yurchekfrodl, Zhenmeng Peng*, Computation-Aided Development of Platinum Alloy Catalysts for Carbon Monoxide Preferential Oxidation, NAM 25, Denver, CO, 2017 (oral presentation).
14. Changlin Zhang, Sang Youp Hwang, Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Property, ACS 253rd National Meeting, San Francisco, CA, 2017 (oral presentation).
15. Sang Youp Hwang, Yanbo Pan, Xiaochen Shen, Eric Yurchekfrodl, Zhenmeng Peng*, Tuning carbon monoxide preferential oxidation properties on platinum alloy nanoparticle catalyst via engineering the active sites, ACS 253rd National Meeting, San Francisco, CA, 2017 (oral presentation).
16. Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Properties, Anhui University, Hefei, China, 01/03/2017 (invited talk).
17. Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Properties, GM Technical Center, Warren, MI, 12/15/2016 (invited talk).
18. Changlin Zhang, Sang Youp Hwang, Shirin Norooz Oliaee, Zhenmeng Peng*, Scalable Production of Facet-Controlled Platinum Group Metal Nanoparticles at Gas-Solid Interface and the Application for Catalysis, MRS Fall Meeting, Boston, MA, 2016 (oral presentation).
19. Sang Youp Hwang, Eric Yurchekfrodl, Zhenmeng Peng*, Carbon Monoxide Oxidation and Preferential Oxidation on Pt Alloy Nanoparticle Catalyst with Engineered Surface, AICHE annual meeting, San Francisco, CA, 2016 (oral presentation).
20. Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Properties, University of New Hampshire, Durham, NH, June 15th, 2016 (invited seminar).
21. Sang Youp Hwang, Eric Yurchekfrodl, Changlin Zhang, Zhenmeng Peng*, Low-Temperature Preferential Oxidation of Carbon Monoxide on Pt3Ni Alloy Nanoparticle Catalyst with Engineered Surface, Gordon Research Conference, New London, NH, 2016 (poster).
22. Changlin Zhang, Sang Youp Hwang, Zhenmeng Peng*, Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Property, 229th ECS Meeting, San Diego, CA, 2016 (oral presentation).
23. Changlin Zhang, Sang Youp Hwang, Zhenmeng Peng*, Surfactant-Free and Scalable Manufacturing of Octahedral Platinum Alloy Nanoparticle Catalyst for Improved ORR Property, TechConnect World Innovation Conference, National Harbor, MD, 2016 (oral presentation).
24. Changlin Zhang, Sang Youp Hwang, Shirin Norooz Oliaee, Zhenmeng Peng*, Studying Growth Process of Facet-Controlled Platinum Group Metal Nanoparticles on Substrate with Electron Microscopy and IR Spectroscopy, MSNO May Conference, John Carroll University, 2016 (invited talk).
25. Sang Youp Hwang, Eric Yurchekfrodl, Changlin Zhang, Zhenmeng Peng*, Low-Temperature Preferential Oxidation of Carbon Monoxide on Pt3Ni Alloy Nanoparticle Catalyst with Engineered Surface, AICHE Midwest Regional Conference, Chicago, IL, 2016 (oral presentation).
26. S. Y. Hwang, Z. M. Peng*, Size Effect of Platinum Nanoparticle Catalyst on Methane Oxidation Reaction, AICHE annual meeting, Salt Lake City, UT, 2015 (oral presentation).
27. C. L. Zhang, S. Y. Hwang, S. N. Oliaee, Z. M. Peng*, Solid-State Chemistry Production and Property of Platinum Group Metal Nanoparticle Catalysts with Tailored Particle Morphology, DOE-BES Catalysis Science PI Meeting, Annapolis, MD, 2015 (poster).
28. C. L. Zhang, S. Y. Hwang, Z. M. Peng*, Octahedral Pt2CuNi Uniform Alloy Nanoparticle Catalyst with High Activity and Promising Stability for Oxygen Reduction Reaction, NAM24, Pittsburgh, PA, 2015 (oral presentation).
29. S. Y. Hwang, E. Yurchekfrodl, and Z. M. Peng*, Effect of Hydrogen Addition on in Catalytic Methane Oxidation at Low Temperature, NAM24, Pittsburgh, PA, 2015 (poster).

30. C. L. Zhang, S. Y. Hwang, Z. M. Peng*, Scalable and Low-Cost Manufacturing of Platinum Group Metal and Alloy Nanoparticle Catalysts with Tailored Particle Morphology, NAM24, Pittsburgh, PA, 2015 (poster).
31. Z. M. Peng*, Pt Electrocatalyst with Improved ORR Property by Manipulating Particle Composition and Morphology, NASA Glenn Research Center, Cleveland, OH, 2014 (invited talk).
32. C. L. Zhang, S. Y. Hwang, Z. M. Peng*, Surfactant-Free Production and Electrocatalytic Property of Platinum Nanoparticles with Tailored Particle Morphology, ElectrochemOhio, Columbus, OH, 2014 (oral presentation).
33. C. L. Zhang, S. Y. Hwang, Z. M. Peng*, Solid State Chemistry Mass Production of Platinum Group Metal Catalysts with Tailored Particle Morphology, AICHE annual meeting, Atlanta, GA, 2014 (oral presentation).
34. Z. M. Peng*, C. L. Zhang, S. Y. Hwang, Scalable and low-cost manufacturing of platinum group metal and alloy nanoparticles with tailored morphology, TechConnect World Conference, National Harbor, MD, 2014 (poster presentation).
35. S. Y. Hwang, C. L. Zhang, Z. M. Peng*, Pt-Ag alloy nanoparticle catalyst for CO oxidation, Pittsburgh-Cleveland Catalysis Society Annual Meeting, Pittsburgh, PA, 2014 (poster presentation).
36. C. L. Zhang, S. Y. Hwang, A. Trout, Z. M. Peng*, Mass production of octahedral Pt-Ni alloy electrocatalyst for oxygen reduction reaction, Pittsburgh-Cleveland Catalysis Society Annual Meeting, Pittsburgh, PA, 2014 (oral presentation).
37. Z. M. Peng*, Preparation of platinum nanoparticles with tailored morphology as advanced catalyst, Department of Chemical and Biomolecular Engineering, Ohio University, Athens, OH, 03/17/2014 (invited seminar).
38. Z. M. Peng*, Mass production of octahedral Pt-Ni/C using innovative solid state chemsitry for oxygen reduction reaction, General Motors Company, Pontiac, MI, 12/12/2013 (invited talk).
39. Z. M. Peng*, C. L. Zhang, S. Y. Hwang, Engineering large-scale production of cubic platinum/carbon catalysts and the shape effect in electrocatalytic oxidation of ammonia, 246th ACS National Meeting, Indianapolis, IN, 2013 (oral presentation).
40. Z. M. Peng*, C. L. Zhang, S. Y. Hwang, Engineering facile, surfactant-free, and large-scale production of supported cubic platinum nanocrystals, NSF Advanced Manufacturing Workshop, Arlington, VA, 2013 (oral presentation).
41. C. L. Zhang, Z. M. Peng*, Facile Preparation of Carbon-Supported Cubic Platinum and the Shape Effect in Electrocatalytic Oxidation of Ammonia, North American Catalysis Society Meeting (23rd NAM), 2013, Louisville, KY (oral presentation).
42. C. L. Zhang, S. Y. Hwang, Z. M. Peng*, Engineering Large-Scale Production of Cubic Platinum/Carbon Catalysts and the Shape Effect in Electrocatalytic Oxidation of Ammonia, Pittsburgh-Cleveland Catalysis Society Annual Meeting, 2013, Pittsburgh, PA (invited talk).
43. Z. M. Peng, J. Wu, A. T. Bell*, Uncovering the Deactivation Mechanism of Platinum Catalysts in Light Alkane Dehydrogenation, AICHE Annual Meeting, 2012, Pittsburgh, PA (oral presentation).
44. Z. M. Peng, A. T. Bell*, Effects of Composition and Size of Pt_xSn_{1-x}/Mg(Al)O on the Catalytic Dehydrogenation of Light Alkanes, MRS Spring Meeting, 2012, San Francisco, CA (Oral presentation).
45. Z. M. Peng, A. T. Bell*, Electron Microscopy Study of Coke Formation on Platinum Catalyst in Alkane Dehydrogenation, MRS Spring Meeting, 2011, San Francisco, CA (oral presentation).
46. Z. M. Peng, H. J. You, H. Yang*, Phase Behavior and Electrochemical Property of Platinum-Silver Bimetallic Nanostructures, MRS Fall Meeting, 2009, Boston, MA (poster presentation, Finalist for Best Poster Award).
47. Z. M. Peng, J. B. Wu, H. Yang*, Preparation and Property of Platinum-on-Metal Heterogeneous Electrocatalysts, MRS Fall Meeting, 2009, Boston, MA (oral presentation).

48. Z. M. Peng, H. Yang*, Platinum-based Heteronanostructures and their Applications as Fuel Cell Electrocatalysts, Renewable Energy Symposium at the University of Rochester, Rochester, NY, 2009 (poster presentation).
49. H. Yang*, Z. M. Peng, J. B. Wu, I. Chaudhury, H. J. You, Crystal Phase Behaviour and Electrocatalytic Property of Nanostructured Platinum Alloys, MRS Spring Meeting, 2009, San Franscisco, CA.
50. Z. M. Peng, S. C. Yang, S. Maksimuk, H. Yang*, Alloyed and Intermetallic Platinum-Based Nanomaterials as Fuel Cell Catalysts, AIChE Annual Meeting, Philadelphia, PA, 2008 (oral presentation).
51. Z. M. Peng, H. Yang*, PtAu Bimetallic Heteronanostructures from Pt-on-Au Nanoparticles: Conversion and their Applications for Electrocatalytic Oxidaiton of Formic Acid, AIChE Annual Meeting, Philadelphia, PA, 2008 (oral presentation).
52. Z. M. Peng, S. C. Yang, S. Maksimuk, H. Yang*, Alloyed, Intermetallic and Bimetallic Platinum-Based Nanomaterials as Fuel Cell Catalysts, the Rochester Fuel Cell Symposium, Rochester, NY, 2008 (poster presentation).
53. Z. M. Peng, H. Yang*, Growth and Electrochemical Properties of Platinum Heteronanostructures, the 82th ACS Colloidal & Surface Science Symposium, Raleigh, NC, 2008 (oral presentation).
54. E. Formo, E. Lee, Z. M. Peng, M. Yavuz, X. M. Lu, H. Yang, Y. N. Xia*, The Functionalization of Electrospun Ceramic Nanofibers with Varying Noble Metals and Nanostructures for Green Catalysis, MRS Fall Meeting, 2008, Boston, MA.
55. S. C. Yang, Z. M. Peng, S. Maksimuk, H. Yang*, Shape Control and Electrochemical Property of Pt and PtPb Nanostructures, MRS Spring Meeting, 2008, San Francisco, CA.

MAJOR AWARDS AND HONORS

- *FRC Faculty Research Fellowship*, The University of Akron, 2019
- *Firestone Research Fellowship*, The University of Akron, 2017
- *FRC Faculty Research Fellowship*, The University of Akron, 2016
- *FRC Faculty Research Fellowship*, The University of Akron, 2014
- *Firestone Research Fellowship*, The University of Akron, 2013
- *Chinese Government Award for Outstanding Self-Financed Students Abroad*, 2009
- *Best Poster Award (finalist),* MRS Fall Meeting, Boston, MA, 2009
- *Leon Huntington Hooker Fellowship*, University of Rochester, 2009
- *Presidential Award*, Chinese Academy of Science, 2005

PH.D. STUDENT ADVISING

Student	***Title of Thesis***	***Completion Date***
Jialu Li	Water electrocatalysis	05/2023 Expected
Dezhen Wu	Active and durable catalyst for oxygen reduction reaction electrocatalysis	05/2022 Expected
Libo Yao	CO_2 hydrogenation under mild reaction condition	05/2021 Expected
Abdulaziz Bentalib	Adsorption-modulated material resistance for chemical sensing	05/2020 Expected
Yanbo Pan	Catalysis in local-enhanced electrostatic field	05/2020 Expected
Xiaochen Shen	Mechanism study of water splitting photocatalysis	08/2019
Changlin Zhang	Rational design of electrocatalysts with enhanced catalytic performance in energy conversion	12/2016 (Current position: Postdoc at LBNL)

Sang Youp Hwang	Synthesis of Pt based nanocatalysts with controlled particle parameters and study for their properties in oxidation reactions	12/2016 (Current position: Scientist at Institute for Advanced Engineering, Korea)
Shirin Norooz Oliaee (Female)	Catalyst development and the structure-dependent properties for hydrazine decomposition	08/2016 (Current position: Engineer at Aisin)

M.S. STUDENT ADVISING

Student	*Title of Thesis*	*Completion Date*
Sammy Juma	Techno-Economic study of CO2 hydrogenation to methanol and dimethyl ether	05/2019
Dana Woychik	Electrochemical study of the catalysis of the oxygen evolution reaction on the surface of disordered mesoporous carbon-loaded Fe-Ni sites	12/2016
Abdulaziz Bentalib	Palladium silver alloy synthesis and characterizations	05/2016

UNDERGRADUATE STUDENT ADVISING

Student	*Title of Project*	*Duration*
Michael Holly	CO oxidation on reducible metal oxides	05/2018 - present
Matthew George	Engineering mass transfer in flow battery (Honors project)	09/2017 – 05/2018
Stephen Sharkey	Flow battery efficiency optimization (Honors project)	09/2017 – 05/2018
Stephen Sharkey	Photocatalyst for HI decomposition	09/2016 – 05/2017
William Sandorf	Platinum-rhodium alloy electrocatalyst activities in methanol oxidation reaction (Honors project)	09/2015 - 05/2017
Benjamin Alexander Kitson	Selective catalytic decomposition of hydrazine (Honors project)	01/2016 - 05/2016
Eric Yurchekfrodl	CO preferential oxidation catalyst development	09/2014 – 05/2017
Matthew George	CO preferential oxidation catalyst development	10/2013 – 05/2014
Alexis Trout (female)	Electrocatalyst development for oxygen reduction reaction	10/2013 – 05/2014

VISITING SCHOLAR HOSTING

Scholar	*Position, Affiliation*	*Duration*
Wanchun Zhu	Associate Professor, Jilin University	09/2018 – 03/2019
Li Zhang (female)	Associate Professor, Zhengzhou University	08/2017 – 07/2018
Fei Hu (female)	Professor, Tongji University	12/2016 – 12/2017
Jiafu Chen	Associate Professor, Zhengzhou University	09/2015 – 09/2016
Xiangkai Kong	Associate Professor, Huaibei Normal University	03/2015 – 11/2015
Lixia Sun (female)	Associate Professor, China Jiliang University	06/2014 – 09/2014

Li Jiang (female)	Associate Professor, China Jiliang University	06/2014 – 09/2014
Chunju Lv (female)	Associate Professor, China Jiliang University	06/2014 – 09/2014

AWARDS RECEIVED BY STUDENTS

- Yanbo Pan, ChBE Graduate Research Award, The University of Akron, 2018
- Xiaochen Shen, ChBE Graduate Research Award, The University of Akron, 2018
- Yanbo Pan, ChBE TA Award, The University of Akron, 2017
- Xiaochen Shen, ChBE Graduate Research Award, The University of Akron, 2016
- Xiaochen Shen, ChBE TA Award, The University of Akron, 2016
- Yanbo Pan, ChBE TA Award, The University of Akron, 2016
- Changlin Zhang, Kokes Award, North American Catalysis Society, 2015
- Changlin Zhang, COE ChemStress Award, The University of Akron, 2015
- Changlin Zhang, ChBE Graduate Research Award, The University of Akron, 2014
- Changlin Zhang, ChBE Graduate Research Award, The University of Akron, 2013

DEPARTMENTAL, COLLEGE AND UNIVERSITY COMMITTEES, SERVICES, ETC.

Activities	***Function***	***Duration***
ChBE Departmental Seminars	Coordinator	01/2014 – present
Online Course Development Committee, ChBE	Member	09/2016 – present
Faculty Research Committee, UA	Member	09/2017 – present
Ohio Super Computer Committee, UA	Member	09/2017 – present
Graduate Assessment Committee, ChBE	Member	09/2015 – 05/2016
ChBE Faculty Search Committee, ChBE	Member	01/2013 – 05/2016
STEM Career Day, UA	Mentor	06/2017
Women in Engineering Summer Camp, COE	Advisor	06/2016
HS Summer Research Program, COE	Advisor	07/2016 – 08/2016
HS Solar Race, COE	Advisor	04/2015
SEE U!, COE	Advisor	06/2014

THESIS DEFENSE COMMITTEE

Student Name	***Type***	***Department***	***Year***
Nitin Mehra	Ph.D. defense	Chem. Eng.	2019
Ashish Dashrath Gadhave	Ph.D. defense	Chem. Eng.	2019
Amit Adhikari	M.S. defense	Chem. Eng.	2019
Jiawei Liu	Ph.D. defense	Poly. Sci.	2018
Jianyu Zhou	Ph.D. defense	Chem. Eng.	2018
Tuo Ji	Ph.D. defense	Chem. Eng.	2018
Suo Xiao	Ph.D. defense	Chem. Eng.	2018
Chen Yang	M.S. defense	Poly. Eng.	2017

Chenrun Feng	M.S. defense	Poly. Eng.	2017
Luyao Zheng	M.S. defense	Poly. Eng.	2017
Tianli Ren	M.S. defense	Poly. Eng.	2017
Zixin Wang	M.S. defense	Poly. Eng.	2017
Chunding Wei	M.S. defense	Poly. Eng.	2017
Qiang Fu	M.S. defense	Poly. Eng.	2017
Fengyu Yang	Ph.D. defense	Chem. Eng.	2017
Baiping Ren	Ph.D. defense	Chem. Eng.	2017
Mingzhen Zhang	Ph.D. defense	Chem. Eng.	2017
Abdullateef Bashiri	Ph.D. defense	Mech. Eng.	2016
Armed Abutaleb	Ph.D. defense	Chem. Eng.	2016
Yan Geng	Ph.D. qualify	Chem. Eng.	2016
Hui Wang	Ph.D. defense	Civil Eng.	2016
Masoume Davoudi	Ph.D. defense	Chem. Eng.	2016
Saeid G. Benis	Ph.D. defense	Chem. Eng.	2016
Ahmad Ivan Karayan	Ph.D. defense	Chem. Eng.	2015
Dinesh Lolla	Ph.D. defense	Chem. Eng.	2015

PROFESSIONAL ACTIVITIES

Administrative Service

- *President*, Pittsburgh-Cleveland Catalysis Society (PCCS), 2016-2018
- *President-Elect*, Pittsburgh-Cleveland Catalysis Society (PCCS), 2014-2016
- *Review Editor*, Frontiers in Chemistry, 2017 – present
- *Guest Editor,* Catalysts, 2018

Organizer/Chair for Conferences/Symposiums

- *Chair*, NAM 26 meeting, 06/2019
- *Organizer/Chair/Co-chair,* PCCS annual meeting, 09/2016, 05/2017
- *Chair/Co-chair,* AICHE Annual Meeting – Electrocatalysis and Photoelectrocatalysis Symposium, 11/2015, 11/2016, 10/2017
- *Chair/Co-chair,* AICHE Annual Meeting – Rational Catalyst Design Symposium, 11/2016, 10/2017
- *Chair,* ACS-SAS-MSNO Meeting, 05/2015

Reviewer for Funding Agencies

- National Science Foundation (NSF)
- Department of Energy (DOE)
- American Chemical Society – Petroleum Research Foundation (ACS PRF)

Reviewer for Journals

- ACS Applied Materials & Interfaces
- ACS Catalysis
- ACS Energy Letters
- ACS Nano

- Advanced Functional Materials
- Advanced Materials
- Angewandte Chemie International Edition
- Catalysis Science and Technology
- Chemical Communications
- Frontiers in Energy
- Journal of Alloys and Compounds
- Journal of the American Chemical Society
- Journal of Applied Catalysis B: Environmental
- Journal of Catalysis
- Journal of Colloid and Interface Science
- Journal of Materials Chemistry
- Journal of Nanomaterials
- Journal of Nanoscience and Nanotechnology
- Journal of Physical Chemistry
- Materials Science and Engineering B
- Nano Energy
- Nano Letters
- Nature Communations
- RSC Advances
- Etc.

Membership

- American Institute of Chemical Engineers
- North American Catalysis Society
- American Chemical Society
- The Electrochemical Society
- Materials Research Society