

## **Eleni A. Kyriakidou, PhD**

Assistant Professor, Chemical and Biological Engineering Department  
State University of New York at Buffalo

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### **EDUCATION**

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- **PhD, Chemical Engineering** [December 2014]  
University of South Carolina (USC) – Columbia, SC  
Thesis Title: Synthesis of Au and Ag Catalysts with Controlled Sizes of Metal Particles (Scholar Commons: 245 downloads)  
Advisor: Dr. Michael D. Amiridis
- **MSc and BSc, Chemical Engineering** [November 2007]  
(GPA: 7.24/10 – **top 10% of class**)  
Aristotelian University of Thessaloniki – Thessaloniki, Greece  
Thesis Title: Catalytic and electrocatalytic production of hydrogen (H<sub>2</sub>) Water Gas Shift (WGS) reaction in a proton-conduction cell-reactor using a Pd (palladium) catalyst.  
Advisor: Dr. Michael Stoukidis

### **HONORS AND AWARDS**

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- Richard J. Kokes Award, North American Catalysis Society Meeting (NAM), Louisville, KY, 06/2013
- Travel award (AIChE Annual Conference 2013) by the Graduate School Office, USC
- Student Poster Gold Award, 7<sup>th</sup> International Dendrimer Symposium, Gaithersburg, MD, 06/2011
- Scholarship from the State Scholarships Foundation of Greece (years 2008 - 11). **Only** Chemical Engineering graduate from the country to receive full graduate fellowship to study in the US

### **PROFESSIONAL EXPERIENCE**

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**State University of New York at Buffalo** [Jan. 2017 – present]  
Chemical and Biological Engineering Department  
Assistant Professor

**Oak Ridge National Laboratory** [Sept. 2014 – Dec. 2016]  
Postdoctoral Research Associate  
Mentor: Dr. Todd J. Toops

**University of South Carolina** [Aug. 2008 – Aug. 2014]  
Graduate Research Assistant and Teaching Assistant, Department of  
Chemical Engineering, College of Engineering and Computing  
Advisor: Dr. Michael D. Amiridis

### **CURRENT RESEARCH GROUP**

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#### **Ph.D. Graduate Students (3)**

- Chih Han Liu (Jan. 2018 – present), CBE University at Buffalo

- Junjie Chen (Jan. 2017 – present), CBE University at Buffalo.
- Jungkuk Lee (Jan. 2017 – present), CBE University at Buffalo.

#### **MSc Graduate Students (1)**

- Phoenix Hoo (Jan. 2018 – present), CBE University at Buffalo.
- Caitlyn Horvatits (Jan. 2019 – present), CBE University at Buffalo.

#### **Undergraduate Students (1)**

- Benjamin Carlson (June 2018 – present), CBE University at Buffalo.

### **RESEARCH GROUP ALUMNI**

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#### *UB Undergraduate students (2)*

*(Current position in italics)*

- Lakshay Chopra (Feb. 2017 – Apr. 2018), *CBE University at Buffalo.*
- Christine Ma (Jan. 2017 – May 2017), *CBE University at Buffalo. University Honors College.*
- Christina Papadimitriou (Apr. 2011 – Apr. 2013). *Intern Analyst at JPMorgan Chase & Co., NY*
- Thomas M. Gostanian (May 2011 – Jul. 2011). *Process Engineer, Anteco Pharma Llc, Lodi, WI*
- Cristina Kubicki (Jan. 2010 – Apr. 2010). *Chemical Engineer, Eastman Chemical Company, Kingsport, TN*

#### *UB Masters students (1)*

- Yiran Chen (Jan. 2017 – June 2018).

#### **Students Accomplishments**

##### *Awards*

- 2<sup>nd</sup> Place Oral Presentation Award, AIChE 2013 Regional Conference, University of Kentucky, KY [C. Papadimitriou]
- 2<sup>nd</sup> Place Oral Presentation Award, AIChE 2012 Regional Conference, Clemson University, SC [C. Papadimitriou]
- 3<sup>rd</sup> Place Poster Award, AIChE 2011 Annual Student Conference, Minneapolis, MN [T.M. Gostanian]
- 1<sup>st</sup> Place Award Technical Oral Presentation, Chemical Engineering REU (Research Experience for Undergraduates) Research Symposium 2011, USC [T.M. Gostanian]
- 1<sup>st</sup> Place Oral Presentation Award, Discovery Day 2010, USC [C. Kubicki]

##### *Research Proposals - Fellowships*

- Center of Undergraduate Research & Creative Activities Fund (CURCA), UB (Funded October 2017 - \$373) [Lakshay Chopra]
- Mark Diamond Research Fund, UB (Funded July 2017 - \$1270) [Yiran Chen]
- Mark Diamond Research Fund, UB (Funded July 2017 - \$1346) [Yuhan Mei]
- Magellan Undergraduate Research Fellowship, USC (Funded 2012) [C. Papadimitriou]
- Magellan Mini-grant Undergraduate Research Fellowship, USC (Funded 2011) [C. Papadimitriou]

##### *Additional Presentations*

- J. Lee, J. Chen and Y. Chen, Poster Presentations – 20<sup>th</sup> Annual Chemical & Biological Engineering Graduate Student Research Symposium, Amherst, NY, 09/2017.
- C. Papadimitriou, Oral Presentation - Discovery Day, USC, 04/2013

- C. Papadimitriou, Poster Presentation - AIChE Annual Undergraduate Conference, Pittsburgh, PA, 10/2012.
- C. Papadimitriou, Poster Presentation - AIChE Annual Undergraduate Conference, Minneapolis, MN, 10/2011.

## PUBLICATIONS (Google Scholar Citations: 59, h-index: 4, i10-index:3)

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### Patents

1. **E.A. Kyriakidou**, T.J. Toops, J.-S. Choi, M.J. Lance, J.E. Parks II. "Exhaust Treatment Catalysts with Enhanced Hydrothermal Stability and Low-Temperature Activity." US Patent Publication US20180250659A1 (2018). **Citations: 1.**

### Referred Journal Publications

(underlined names indicate UB students advised by E.A. Kyriakidou)

8. J. Lee, Joseph R. Theis, **E.A. Kyriakidou**. "Vehicle emissions trapping materials: successes, challenges, and the path forward." *Applied Catalysis B: Environmental*, 243, 397-414 (2019).
7. S. Du, W. Tang, Y. Guo, A. Binder, **E.A. Kyriakidou**, T.J. Toops, S. Wang, Z. Ren, S. Hoang, P.-X. Gao. "Understanding Low Temperature Oxidation Activity of Nano-Array Based Monolithic Catalysts: from Performance Observation to Structural and Chemical Insights." *Emiss. Control Sci. Technol.* 3, 18-36 (2017). **Citations: 4.**
6. A.P. Wong, **E.A. Kyriakidou**, T.J. Toops and J.R. Regalbuto. "The Catalytic Behavior of Precisely Synthesized Pt-Pd Bimetallic Catalysts for Use as Diesel Oxidation Catalysts." *Catalysis Today*, 267, 145-156 (2016). **Citations: 17.**
5. M.-Y. Kim, **E.A. Kyriakidou**, J.-S. Choi, T.J. Toops, A.J. Binder, C. Thomas, J.E. Parks II, V. Schwartz, J. Chen and D.K. Hensley. "Enhancing Low-Temperature Activity and Durability of Pd-based Diesel Oxidation Catalysts Using ZrO<sub>2</sub> Supports." *Applied Catalysis B: Environmental*, 187, 181-194 (2016). **Citations: 16.**
4. **E.A. Kyriakidou**, O.S. Alexeev, A.P. Wong, C. Papadimitriou, M.D. Amiridis and J.R. Regalbuto. "Synthesis of Ag Nanoparticles on Oxide and Carbon Supports from Ag Diammine Precursor." *Journal of Catalysis*, 334, 749-756 (2016). **Citations: 6.**
3. **E.A. Kyriakidou**, K. Khivantsev, T.M. Gostanian, O.S. Alexeev and M.D. Amiridis. "Silica-Supported Gold/Dendrimer Nanocomposites with Controlled Sizes of Gold Particles." *Applied Catalysis A: General* 504, 482-492 (2015). **Citations: 4.**
2. Z. Nazarpour, K. Khivantsev, **Eleni A. Kyriakidou**, C. Kubicki, S. Ma, P.T. Fanson, O.S. Alexeev and M.D. Amiridis. "Dendrimer-Mediated Synthesis of Supported Rhodium Nanoparticles with Controlled Size: Effect of pH and Dialysis." *Journal Colloid & Interface Science* 398, 22-32 (2013). **Citations: 11.**
1. **E.A. Kyriakidou**, J.-S. Choi, T.J. Toops, J.E. Parks II. "A comparative study of ZSM-5 and BEA zeolites for propylene and NO adsorption and desorption characteristics." Under preparation.

### RESEARCH PROPOSALS

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- "Direct catalytic conversion of methane to alcohols", Laboratory Directed Research & Development full proposal for seed fund (**190k**) Oak Ridge National Lab, Eleni A. Kyriakidou (Co-P.I.), Todd J. Toops (P.I.). **Fully Funded** September 2016 – Sub-award transferred to UB (**60k**) (07/14/17-09/30/18).
- Participated in design and writing of 3 annual proposals (2009 – 2011), P.I.: C.T. Williams, Co-P.I.: M.D. Amiridis and O.S. Alexeev) (Funded 2009, 2010, 2011) Toyota Motor Engineer and Manufacturing of North America, Inc. "Synthesis and Characterization of Supported Metal Catalysts for Automotive Applications"

## INVITED PRESENTATIONS

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- Department of Chemical and Biomedical Engineering, West Virginia University, Morgantown, WV, 01/2018
- 254<sup>th</sup> ACS National Meeting, Advanced Nanomaterials Catalysts for Sustainable Energy & Fuel, Washington, DC, 08/2017
- Department of Civil, Structural and Environmental Engineering, State University of New York at Buffalo, Buffalo, NY, 03/2017
- Catalysis Society of Metro New York (NYCS), Clinton, NJ, 03/2017
- State University of New York at Buffalo, Chemical & Biological Engineering Department, Buffalo, NY, 09/2016
- Oak Ridge National Laboratory, National Transportation Research Center, Knoxville, TN, 04/2014

## CONFERENCES PRESENTATIONS

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### *Oral Presentations*

*(underlined names indicate students advised by E.A. Kyriakidou)*

13. Lee, J., Vattipalli, V., Fan, W., Kyriakidou, E.A., “Ion-Exchanged Zeolites for Hydrocarbon Traps and Passive NO<sub>x</sub> Adsorption Applications”, AIChE Annual Conference, Pittsburgh, PA (11/2018).
12. AIChE Annual Conference, “A Comparative Study of ZSM-5 and BEA-Zeolites for Low Temperature Passive Adsorption”, Minneapolis, MN (11/2017).
11. 25<sup>th</sup> North American Catalysis Society Meeting (NAM), “A Comparative Study of ZSM-5 and BEA Zeolites for Low Temperature Passive Adsorption”, Denver, CO (06/2017).
10. AIChE Annual Conference, “Impact of Mixed Oxides Supports, on the Durability and Low-Temperature Performance of Pd-Based Diesel Oxidation Catalysts”, San Francisco, CA (11/2016).
9. AIChE Annual Conference, “A Comparative Study of ZSM-5 and BEA-Zeolites for Hydrocarbon Trap Applications under “Cold-Start” Conditions”, San Francisco, CA (11/2016).
8. 15<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, “Impact of Mixed Oxides Supports on the Durability and Low-Temperature Performance of Pd-based Diesel Oxidation Catalysts”, Asheville, NC (09/2016).
7. AIChE Annual Conference, “A Comparative Study of ZSM-5 and  $\beta$ -Zeolites for Hydrocarbon Trap Applications under “Cold-Start” Conditions”, Salt Lake City, UT (11/2015).
6. 24<sup>th</sup> North American Catalysis Society Meeting (NAM), “Impact of ZrO<sub>2</sub> Supports on the Durability and Low-Temperature Performance of Pd-Based Diesel Oxidation Catalysts”, Pittsburgh, PA (06/2015).
5. 13<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, “Silica-Supported Gold/Dendrimer Nanocomposites with Controlled Sizes of Gold Particles”, Asheville, NC (09/2014).
4. 23<sup>rd</sup> North American Catalysis Society Meeting (NAM), “Ag Diammine Impregnation on Oxide Using Strong Electrostatic Adsorption”, Louisville, KY (06/2013).
3. AIChE Annual Conference, “Preparation and Quantitative Analysis of PAMAM-Stabilized Metal Ions in Aqueous Solutions: Effect of pH and Dialysis”, Pittsburgh, PA (11/2012).
2. Graduate Student Day, “Synthesis of Dendrimer-Derived Fe Nanocomposites in Aqueous Solution: Effect of pH and Dialysis”, USC (03/2012).
1. 10<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, “Preparation and Quantitative Analysis of PAMAM-Stabilized Cu/Au Nanoparticles”, Asheville, NC (09/2011).

### *Poster Presentations*

14. Catalysis Gordon Research Conference – Accelerating Catalytic Solutions to Global Grand Challenges, “Ion-exchanged zeolites for hydrocarbon traps and passive NO<sub>x</sub> adsorption applications”, New London, NH (06/2018)

13. 19th Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop, “Impact of Mixed Oxide Supports on the Durability and Low-Temperature Performance of Pd-based Diesel Oxidation Catalysts”, Ann Arbor, MI (04/2016).
12. 19th Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop, “A Comparative Study of ZSM-5 and BEA-Zeolites for Hydrocarbon Trap Applications under “Cold-Start” Conditions”, Ann Arbor, MI (04/2016).
11. AIChE Annual Conference (Meet the Faculty Candidate Poster Session) “Rational Design of Catalytic and Hydrocarbon Trapping Materials to Meet Automotive Emissions Regulations”, Salt Lake City, UT (11/2015).
10. 14<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, “A Comparative Study of ZSM-5 and BEA-Zeolites for Hydrocarbon Trap Applications under “Cold-Start” Conditions”, Clemson, SC (09/2015).
9. 14<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, “Synthesis of Ag Supported Catalysts on Oxides”, Clemson, SC (09/2015).
8. 18<sup>th</sup> Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop, “Impact of ZrO<sub>2</sub> Supports on the Durability and Low Temperature Performance of Pd-based Diesel Oxidation Catalysts”, Dearborn, MI (04/2015).
7. 18<sup>th</sup> Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop, “A Comparative Study of ZSM-5 and  $\beta$ -Zeolites for Hydrocarbon Trap Applications under “Cold-Start” Conditions”, Dearborn, MI (04/2015).
6. 23<sup>rd</sup> North American Catalysis Society Meeting (NAM), “Preparation and Quantitative Analysis of Dendrimer-Stabilized Au Nanoparticles”, Louisville, KY (06/2013).
5. AIChE Annual Conference, “Ag Diammine Impregnation on Oxides Using Strong Electrostatic Adsorption”, Pittsburgh, PA (11/2012).
4. 22<sup>nd</sup> North American Catalysis Society Meeting (NAM), “Preparation of M-G4OH Nanocomposites in Aqueous Solution: Effect of Dialysis and pH Adjustment”, Detroit, MI (06/2011).
3. 7<sup>th</sup> International Dendrimer Symposium, “Preparation of M-G4OH Nanocomposites in Aqueous Solution: Effect of Dialysis and pH adjustment”, Gaithersburg, Maryland (06/2011).
2. Graduate Student Symposium, “Preparation and quantitative analysis of PAMAM-stabilized Metal Nanoparticles: Effect of Dialysis and pH Adjustment”, USC (04/2011).
1. 9<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, “Preparation and Quantitative Analysis of PAMAM-Stabilized Metal Nanoparticles: Effect of Dialysis and pH Adjustments”, Ashville, NC (09/2010).

## CONTRIBUTED PRESENTATIONS

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\*Presenting author

### *Oral Presentations*

4. Kyriakidou, E.A., Lance, M.J., Choi, J.-S., Toops, T.J.\*, “Advanced support modifications to improve the low-temperature activity and durability of Pd-based emissions control catalysts”, 25<sup>th</sup> North American Catalysis Society Meeting (NAM), Denver, CO (06/2017).
3. Hoang, S.\*, Tang, W., Wang, S., Guo, Y., Binder, A.J., Kyriakidou, E.A., Toops, T.J., Liu, J., Pauly, T., Pu-Xian Gao, P.-X., “Exceptional Low Temperature Diesel Activity over Pt Supported TiO<sub>2</sub> Nano-Array Integrated Monolithic Catalysts”, 25<sup>th</sup> North American Catalysis Society Meeting (NAM), Denver, CO (06/2017).
2. Hoang, S.\*, Guo, Y., Tang, W., Wang, S., Binder, A.J., Kyriakidou, E.A., Toops, T.J., Nam, C.-Y., Ding, Y., Gao, P.-X., “Low Temperature Propane Oxidation over Atomic Layer Deposited Pt Supported TiO<sub>2</sub> Nano-Array Integrated Monolithic Catalysts”, 25<sup>th</sup> North American Catalysis Society Meeting (NAM), Denver, CO (06/2017).

1. Toops, T.J.\*, Kyriakidou, E.A., Choi, J.-S., Parks II, J.E., “A comparative study of ZSM-5 and BEA-Zeolites for hydrocarbon trap applications under “cold-start conditions”, International Conference on Environmental Catalysis (ICEC), Newcastle, Australia (07/2016).

*Poster Presentations*

2. Kyriakidou, E.A., Choi, J.-S.\*, Toops, T.J., Parks II, J.E., “A comparative study of ZSM-5 and  $\beta$ -zeolites for hydrocarbon trap applications under “cold-start” conditions”, International Congress on Catalysis (ICC), Beijing, China (07/2016).
1. Kyriakidou, E.A., Lance, M.J., Choi, J.-S., Toops, T.J.\*, “Impact of ZrO<sub>2</sub>-based Supports on the Durability and Low-Temperature Performance of Pd-based Oxidation Catalysts”, International Conference on Environmental Catalysis (ICEC), Newcastle, Australia (07/2016).

**TEACHING EXPERIENCE**

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Principles and Practice of Environmental Catalysis (CE400/500), cross-listed graduate/undergraduate course: Spring 2018 (14 students)

Transport Phenomena I (CE 509), Graduate Core Course: Fall 2017 (16 students), Fall 2018 (29 students)

**PROFESSIONAL LEADERSHIP AND SERVICE**

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*Conference Session Chair/Co-Chair*

Session Chair, Catalysis and Reaction Engineering Division: Sessions: 1) Fundamentals of Catalysis V (AIChE Annual Meeting, Pittsburgh, PA, 11/2018), 3) Applied Environmental Catalysis I & II, 4) Future Automotive Catalysis, 5) Fundamentals of Supported Catalysis I: Hydrocarbon Reactions (AIChE Annual Meeting, Minneapolis, MN, 10/2017), 6) Environmental Catalysis II: Gas Emission Control (AIChE Annual Meeting, Salt Lake City, UT, 11/2015).

Session Co-Chair, Catalysis and Reaction Engineering Division: Sessions: 1) Future Automotive Catalysis I, 2) Fundamentals of Supported Catalysis III (AIChE Annual Meeting, Pittsburgh, PA, 11/2018), 1) Future Automotive Catalysis: Automotive Emissions Control, 2) Catalytic Processing of Fossil and Biorenewable Feedstocks V: Acids and Polyols (AIChE Annual Meeting, San Francisco, CA, 11/2016), 3) Environmental Catalysis I: Gas Emission Control (AIChE Annual Meeting, Salt Lake City, UT, 11/2015).

*Sessions Organized*

- 1) 254<sup>th</sup> ACS National Meeting, Division of Catalysis Science and Technology, Nanoporous Materials for Catalysis session (15 invited speakers), Washington, DC, 08/2017, 2) NAM26 North American Catalysis Society Meeting, Environmental Catalysis session, Chicago, IL (06/2019).

*Reviewer for scientific journals*

Applied Catalysis A: General, Applied Catalysis B: Environmental, Catalysis Today, Catalysis Communications, Catalysis Science & Technology, SAE International Journal of Fuels and Lubricants, Emission Control Science & Technology, Journal of Molecular Catalysis A: Chemical, ACS Catalysis, Industrial & Engineering Chemistry Research (ACS publications), Chemical Engineering Journal, Catalysis Letters, ChemCatChem, New Journal of Chemistry, Energy Technology

*Proposal Reviewer*

NSF CBET Reaction Engineering, Washington, DC, 02/2018

NSF CBET Catalysis Program, Washington, DC, 02/2017

*Poster Judge*

SEAS Graduate Poster Competition, Buffalo, NY, 04/2017

Catalysis Society of Metro New York (NYCS), Clinton, NJ, 03/2017

AIChE Annual Meeting, Chemical Reaction Engineering poster session, San Francisco, CA, 11/2016

15<sup>th</sup> Annual Symposium of the Southeastern Catalysis Society, Asheville, NC, 09/2016

19<sup>th</sup> Annual Chemical & Biological Engineering Graduate Student Research Symposium, Buffalo, NY, 09/2016

#### *Outreach Activities*

TINKER Program (9<sup>th</sup>-12<sup>th</sup> grade) through CBE Society of Women Engineers (Aug. 2017), Volunteer with Science is Elementary (Kindergarten) through the School of Engineering and Applied Sciences (Apr. 2018).

#### *Memberships*

American Chemical Society (ACS) member since 2017, Catalysis Society of Metropolitan New York (NYCS) member since 2017, Catalysis and Reaction Engineering Division (CRE) in AIChE member since 2016, Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) member since 2015, Southeastern Catalysis Society member since 2010, North American Catalysis Society (NACS) member since 2009, American Institute of Chemical Engineers (AIChE), member since 2008

#### *Department Service*

Participated in Science Teachers Association of New York State (STANYS) Science Fair hosted by CBE (June 2018)

Judge for CE 408 presentations (May 2018).

Participated in CBE's Open House for future undergraduate students (Apr. 15<sup>th</sup>, 2018).

Graduate Student Recruitment Event, AIChE Annual Meeting (San Francisco, CA 11/2016, Minneapolis, MN 11/2017).

Graduate Recruitment Committee Member (Jan. 2017-Apr. 2018).

Undergraduate Committee Member (Apr. 2018 – present).

Serving as a co-organizer for annual Graduate Research Symposium in Department of Chemical and Biological Engineering at UB, 2017-present.