Eleni A. Kyriakidou, PhD

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

- **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: 221 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_2) Water Gas Shift (WGS) reaction in a proton–conduction cell–reactor using a Pd (palladium) catalyst.
  Advisor: Dr. Michael Stoukidis

HONORS AND AWARDS

- 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, 7th 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 EXPRERIENCE

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

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 (2)

- Phoenix Hoo (Jan. 2018 – present), CBE University at Buffalo.
- Yiran Chen (Jan. 2017 – present), CBE University at Buffalo.

Undergraduate Students (1)

- Lakshay Chopra (Feb. 2017 – present), CBE University at Buffalo.

STUDENTS MENTORED

Undergraduate students (3)
(Current position in italics)

- 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*

Students Accomplishments

Awards

- 2nd Place Oral Presentation Award, AIChE 2013 Regional Conference, University of Kentucky, KY [C. Papadimitriou]
- 2nd Place Oral Presentation Award, AIChE 2012 Regional Conference, Clemson University, SC [C. Papadimitriou]
- 3rd Place Poster Award, AIChE 2011 Annual Student Conference, Minneapolis, MN [T.M. Gostanian]
- 1st Place Award Technical Oral Presentation, Chemical Engineering REU (Research Experience for Undergraduates) Research Symposium 2011, USC [T.M. Gostanian]
- 1st 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 – 20th 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.

JOURNAL PUBLICATIONS

10. S. Hoang, Y. Guo, W. Tang, S. Wang, S. Du, C.-Y. Nam, Y. Ding, A.J. Binder, **E.A. Kyriakidou**, T.J. Toops, P.-X. Gao. "Enhanced Mass Transport and Strong Metal-Support Interactions in the Rutile Titania Nano-array Supported Pt based Diesel Oxidation Catalyst." To be submitted to Nature Communications in November 2017.
9. **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.
8. J. Lee, **E.A. Kyriakidou**. "A Review on Passive Hydrocarbon/NOx Trapping Materials for Cold-Start Applications." Under preparation.
7. S. Hoang, A.J. Binder, Y. Guo, W. Tang, S. Wang, J.J. Liu, X. Lu, Y. Ding, **E.A. Kyriakidou,** T.J. Toops, T.J. Pauly, P.-X. Gao. "Low Temperature Diesel Oxidation Activated over Single-Atom and Sun-Nanometer Platinum Supported Nanowire Array Integrated Catalytic Converters." Under revision in *Science* (submitted September 2017).
6. 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).
5. 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).
4. M.-Y. Kim, **E.A. Kyriakidou**, J.-S. Cho, 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_2 Supports." *Applied Catalysis B: Environmental*, 187, 181-194 (2016).
3. **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).
2. **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).
1. Z. Nazarpoor, 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).

RESEARCH PROPOSALS

- "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

- 254th 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, MJ, 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

Oral Presentations

12. AIChE Annual Conference, "A Comparative Study of ZSM-5 and BEA-Zeolites for Low Temperature Passive Adsirption", Minneapolis, MN (11/2017).
11. 25th 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. 15th 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 β-Zeolites for Hydrocarbon Trap Applications under "Cold-Start" Conditions", Salt Lake City, UT (11/2015).
6. 24th North American Catalysis Society Meeting (NAM), "Impact of ZrO_2 Supports on the Durability and Low-Temperature Performance of Pd-Based Diesel Oxidation Catalysts", Pittsburgh, PA (06/2015).
5. 13th Annual Symposium of the Southeastern Catalysis Society, "Silica-Supported Gold/Dendrimer Nanocomposites with Controlled Sizes of Gold Particles", Asheville, NC (09/2014).
4. 23rd 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. 10th Annual Symposium of the Southeastern Catalysis Society, "Preparation and Quantitative Analysis of PAMAM-Stabilized Cu/Au Nanoparticles", Asheville, NC (09/2011).

Poster Presentations

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. 14th 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. 14th Annual Symposium of the Southeastern Catalysis Society, "Synthesis of Ag Supported Catalysts on Oxides", Clemson, SC (09/2015).
8. 18th Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop, "Impact of ZrO_2 Supports on the Durability and Low Temperature Performance of Pd-based Diesel Oxidation Catalysts", Dearborn, MI (04/2015).
7. 18th Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop, "A Comparative Study of ZSM-5 and β-Zeolites for Hydrocarbon Trap Applications under "Cold-Start" Conditions", Dearborn, MI (04/2015).
6. 23rd 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. 22nd 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. 7th 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. 9th 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

*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", 25th 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_2 Nano-Array Integrated Monolithic Catalysts", 25th 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_2 Nano-Array Integrated Monolithic Catalysts", 25th 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 β-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_2-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

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

PROFESSIONAL LEADERSHIP AND SERVICE

Conference Session Chair/Co-Chair
Session Chair, Catalysis and Reaction Engineering Division: Sessions: 1) Applied Environmental Catalysis I & II, 2) Future Automotive Catalysis, 3) Fundamentals of Supported Catalysis I: Hydrocarbon Reactions (AIChE Annual Meeting, Minneapolis, MN, 10/2017), 4) 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: 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
254th ACS National Meeting, Division of Catalysis Science and Technology, Nanoporous Materials for Catalysis session (15 invited speakers), Washington, DC, 08/2017

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

Proposal Reviewer
NSF CBET Catalysis and Biocatalysis Program, Washington, DC, 01/2017.

Poster Judge
SEAS Graduate Poster Competition, Buffalo, NY, 04/2017
Catalysis Society of Metro New York (NYCS), Clinton, MJ, 03/2017
AIChE Annual Meeting, Chemical Reaction Engineering poster session, San Francisco, CA, 11/2016
15th Annual Symposium of the Southeastern Catalysis Society, Asheville, NC, 09/2016
19th Annual Chemical & Biological Engineering Graduate Student Research Symposium, Buffalo, NY, 09/2016

Outreach Activities
TINKER Program (9th-12th grade) through CBE Society of Women Engineers (Aug. 2017).

Memberships
American Chemical Society (ACS) member since 2017, Catalysis Society of Metropolitan New York (NYCS) member since 2017, Catalysis and Reaction Engineering Division (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
Graduate Student Recruitment Event, AIChE Annual Meeting (San Francisco, CA 11/2016, Minneapolis, MN 11/2017).
Graduate Faculty Committee Member (Jan. 2017-present).
Participated in the Accepted Graduate Student Reception, Buffalo, NY, 04/2017.

INTERNSHIPS

SMS – Mevac GmbH – Essen, Germany (research intern) [June – July 2007]
Developed a computer program, in MS Excel, for calculating the temperature, heat quantity and pressure drop at the outlet of a tube, assuming known inlet air and tube wall temperatures (to be used for secondary metallurgy treatment vessels)

University of Alicante – Spain (research intern) [Sep. – Dec. 2006]
Industrial pollutant analysis. Pollutants characterization using a Gas Chromatograph (GC). Analysis and characterization of the products of pyrolysis and combustion.
Supervisor: Rafael Font Montesinos

Lemona Industrial.S.A. – **Bilbao, Spain** (quality lab, process control intern) [July – Aug. 2005]
Chemical analysis, physical characterization and mechanical properties of cement products. Instrumental analysis using: X-ray fluorescence, diffraction spectrometry, UV-vis spectroscopy and colorimetric titration. Characterization of mechanical properties of cement and derivative products, mortars and concrete.