

JACK HESS BARICUATRO
Department of Chemistry and Physics
Louisiana State University in Shreveport, Shreveport LA
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EDUCATION

Ph. D. Physical-Analytical Chemistry, Texas A&M University, College Station, TX, 2006
Dissertation: "Electrodeposition of Ultrathin Pd, Co and Bi Films on Well-defined Noble-metal Surfaces: Studies by Ultrahigh Vacuum-Electrochemistry (UHV-EC)"
M. S. Chemistry, University of San Carlos, Philippines, 1997
Thesis: "Isolation and Characterization of Bioactive Metabolites from Red Alga *Halymenia durvillaei* Bory"
B. S. Chemistry, University of San Carlos, 1993, *summa cum laude*

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Chemistry and Physics, September 2021 up to the present
Staff Scientist, Joint Center for Artificial Photosynthesis, Caltech, 2014 – August 2021
Senior Post-doctoral Research Scholar, Joint Center for Artificial Photosynthesis, Caltech, 2012–2014
Associate Professor, Department of Chemistry, University of San Carlos, 2010–2012
Assistant Instructor, Department of Chemistry, University of San Carlos, 2009–2010
Post-doctoral Research Associate, University of Washington, 2006–2008
Research Assistant, Electrochemical Surface Science Laboratory, Texas A&M University, 2000–2006
Instructor's Assistant, Department of Chemistry, Texas A&M University, 2002–2004
Teaching Assistant, Department of Chemistry, Texas A&M University, 2000–2002
Lecturer and Laboratory Instructor, Department of Chemistry, University of San Carlos, 1993–2000
Research Associate, Natural Products Research, University of San Carlos, Philippines, 1995–2000

RESEARCH EXPERIENCE

Project Lead, Electrochemical Surface Science of Molecular Transformations, LSUS, USA, August 2021 - present

- Surface coordination chemistry of metal electrodes with electroactive secondary metabolite templates
- Atomically modified "designer electrodes" for environmental applications
- Electrochemical activation of recalcitrant molecules
- Metal- and molecular-sorption capacities of biomass and root systems
- Analytical chemistry of surfaces in ultrahigh vacuum

Staff Scientist, Joint Center for Artificial Photosynthesis, Caltech, USA, November 2014 – August 2021

- Surface science of electrocatalysis
- Predictive and diagnostic structure–activity correlations, via *ex situ*, *in situ*, and *operando* surface characterization, in the electrochemical reduction of carbon dioxide and carbon monoxide
- Discovery of heterogeneous multimetallic electrocatalysts for the conversion of carbon dioxide into liquid transportation fuels such as methanol and ethanol
- Regulation of product selectivity by atomic-level structural modification of electrode surfaces

Senior Post-doctoral Research Scholar, California Institute of Technology, USA, 2012–2014

- Preparation and surface characterization of electrocatalysts for the three core reactions of artificial photosynthesis: hydrogen-evolution reaction (HER), oxygen-evolution reaction (OER), carbon dioxide reduction reactions (CO₂RR)
- Electrodeposition and intercalation of layered Mn-based heterogeneous analog of the oxygen-evolving center found in natural photosynthetic organisms
- Heterogenization, via surface immobilization, of homogeneous HER catalysts

Project Lead, Natural Products Research Group, University of San Carlos, Philippines, 2009–2012

- Multidepartmental research grant approval that funded and recognized the Research Group as part of the Commission on Higher Education-Philippine Higher Education Network
- Isolation, purification, and characterization of natural products with high hypoglycemic, antioxidant, antimicrobial, and antimutagenicity potentials from indigenous terrestrial and marine resources of Cebu
- Conceptualization and administration of capability-development workshops for university and high school student researchers in solvent-solvent extractions, chromatographic separations, brine-shrimp assays and metal adsorption isotherms on biomass

Post-doctoral Research Associate, University of Washington, USA, September 2006–November 2008

- Energetics and surface structure of metals on semiconducting polymer surfaces of interest in photovoltaic and photoelectronic devices
- Single-crystal microcalorimetry and ion-scattering spectroscopy for the determination of heat of adsorption, growth mode, sticking probability of metals on (a) organic films, *viz.* polyfluorenes and poly(3-hexylthiophene); (b) well-characterized oxide supports (CeO₂)

Research Assistant, Electrochemical Surface Science Laboratory, Texas A&M University, USA, 2000–2006

- Electrochemical surface science of ultrathin metal films on well-defined metal electrodes for (a) hydrogen fuel-storage (b) magneto-optical information-storage devices, and (c) biocompatible fuel cells and “green chemistry” applications.
- Chemisorption and surface redox chemistry of organic molecules on noble metal surfaces
- Broad experience in operating ultrahigh vacuum electrochemical (UHV-EC) systems equipped with traditional electrochemical techniques in combination with low-energy electron diffraction (LEED) spectrometer for surface crystallography; Auger electron spectrometer (AES) for surface composition; X-ray photoelectron spectroscopy (XPS) for oxidation-state assay of surface species; and quadrupole mass spectrometer for residual gas analysis and temperature-programmed desorption analysis.

Research Associate, Natural Products Research, University of San Carlos, Philippines, 1995–2000

- Antibacterial, fungal, larvicidal, and acaricidal screening of tropical plant and algal extracts
- Spectroscopic analyses (FTIR, C-13 NMR, H-1 NMR, UV-VIS) for structural elucidation of isolates

TEACHING EXPERIENCE

Louisiana State University Shreveport, Shreveport, LA

- **BS Chemistry Program:** Instrumental Analysis • Analytical Chemistry • Physical Chemistry • Biochemistry
- **Service Courses:** General Chemistry • Physical Science

University of San Carlos, Philippines

- **Master’s Program in Chemistry:** Physical Organic Chemistry • Selected Topics in Physical Chemistry
- **BS Chemistry Program:** Environmental Chemistry • Physical Chemistry I (Chemical Thermodynamics) and II (Kinetics and Chemical Equilibrium) • Organic Chemistry I, II and III • Chemical Instrumentation in Analytical Chemistry • General Chemistry I and II • Chemical Calculations • Research Problems I and II.
- **Service Courses:** General Chemistry for Engineers. General Chemistry for Science and Mathematics Education

Texas A&M University, College Station, TX, as TA and Instructor’s Assistant

- **BS Chemistry Program:** Physical Chemistry I and II Laboratory • Quantitative Analysis Laboratory
- **Service Lab Courses:** General Chemistry I and II • General Chemistry for Engineering Students • Molecular Science for Citizens

AWARDS

George A. Khoury, Jr. Endowed Super Professor in Space Science, Fall 2022 - present

Distinguished Graduate Student Award, The Association of Former Students of Texas A&M University, 2004

AFFILIATIONS

Chair, Northwest Louisiana American Chemical Society, Jan. 2022 – Dec. 2022; Jan. 2024 – Dec. 2024
Member, American Chemical Society
Member, Philippine-American Academy of Science and Engineering
Member, Phi Lambda Upsilon (National Chemistry Honor Society)

PUBLICATIONS

1. A. Villordon, **J. H. Baricuatro**. “Variation in Root System Architecture Response to Arsenic during Establishment and Onset of Storage Root Formation in Two Sweetpotato (*Ipomoea batatas* L.) Cultivars” Horticultural Science Vol. 59 (2024) 489-495.
2. **J. H. Baricuatro**. “Mass Spec Live” Nature Catalysis 5 (2022) 1077-1078.
3. **J. H. Baricuatro**, S. Kwon, Y.-G. Kim, K. D. Cummins, S. Naserifar, W. A. Goddard. “Operando Electrochemical Spectroscopy for CO on Cu(100) at pH 1 to 13: Validation of Grand Canonical Potential Predictions” ACS Catalysis 11 (2021) 3173-3181
4. **J. H. Baricuatro**, Y.-G. Kim, C. Korzeniewski, M. P. Soriaga. “Tracking the Prelude of the Electroreduction of Carbon Monoxide via its Interaction with Cu(100): Studies by Operando Scanning Tunneling Microscopy and Infrared Spectroscopy.” Catalysis Today 358 (2020) 210-214.
5. **J. H. Baricuatro**, Y.-G. Kim, C. F. Tsang, A. Javier, K. D. Cummins, J. C. Hemminger. “Selective Conversion of CO into Ethanol on Cu(511) Surface Reconstructed from Cu(pc): Operando Studies by Electrochemical Scanning Tunneling Microscopy, Mass Spectrometry, Quartz Crystal Nanobalance, and Infrared Spectroscopy.” Journal of Electroanalytical Chemistry 857 (2020) 113704.
6. **J. H. Baricuatro**, Y.-G. Kim, “*Seriatim* methods in the *operando* surface electrochemical studies of carbon monoxide reduction at selected well-defined copper surfaces.” Current Topics in Electrochemistry, 204 (2019) Vol. 21, 119-130.
7. C. F. Tsang, A. Javier, Y.-G. Kim, **J. H. Baricuatro**, K. D. Cummins, J. Kim, G. Jerkiewicz, J. C. Hemminger, M. P. Soriaga. “Potential-dependent Adsorption of CO and Its Low-overpotential Reduction to CH₃H₂OH on Cu(511) Surface Reconstructed from Cu(pc): Operando Studies by Seriatim STM-EQCN-DEMS.” Journal of the Electrochemical Society 165 (2018) J3350-J3354.
8. **J. H. Baricuatro**, Y.-G. Kim, C. Korzeniewski, M. P. Soriaga. “*Seriatim* ECSTM-ECPMIRS of the Adsorption of Carbon Monoxide on Cu(100) in Alkaline Solution at CO₂-Reduction Potentials” Electrochemistry Communications 91 (2018) 1-4.
9. M. P. Soriaga, **J. H. Baricuatro**, A. C. Javier, Y.-G. Kim and K. D. Cummins, C. F. Tsang, J. C Hemminger, N. N. Bui, J. L. Stickney. “Electrochemical Surface Science of CO₂ Reduction at Well-Defined Cu Electrodes: Surface Characterization by Emersion, *Ex Situ*, *In Situ*, and *Operando* Methods.” Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry. <https://doi.org/10.1016/B978-0-12-409547-2.13643-1>.
10. Y.-G. Kim, **J. H. Baricuatro**, M. P. Soriaga. “Surface Reconstruction of Polycrystalline Cu Electrodes in Aqueous KHCO₃ Electrolyte at Potentials in the Early Stages of CO₂ Reduction.” Electrocatalysis 9 (2018) 526-530.
11. Y.-G. Kim, A. Javier, **J. H. Baricuatro**, M. P. Soriaga. “*Seriatim* ECSTM-DEMS of Cu-catalyzed Reduction of CO in Alkaline Solution: *Operando* Correlation of Electrode-Surface Atomic Structure with Product Selectivity.” Current Topics in Catalysis 13 (2017) 1-9.
12. F. H. Saadi, A. I. Carim, W. S. Drisdell, S. Gul, **J. H. Baricuatro**, J. Yano, M. P. Soriaga, N. S. Lewis. “*Operando* Spectroscopic Analysis of CoP Films Electrocatalyzing the Hydrogen-evolution Reaction.” Journal of the American Chemical Society 139 (2017) 12927-12930.
13. C. Hahn, T. Hatsukade, Y.-G. Kim, A. Vailionis, **J. H. Baricuatro**, D. C. Higgins, S. A. Nitopi, M. P. Soriaga, T. Jaramillo. “Engineering Cu Surfaces for the Electrocatalytic Conversion of CO₂: Controlling Selectivity toward Oxygenates and Hydrocarbons.” Proceedings of the National Academy of Sciences of the United States of America 114 (2017) 5918-5923.
14. A. Javier, **J. H. Baricuatro**, Y.-G. Kim, M. P. Soriaga. “Electrocatalytic Reduction of CO₂ on Cu and Au/W Electrode Surfaces: Empirical (DEMS) Confirmation of Computational (DFT) Predictions.” ECS Transactions 75 (2017) 1–17.
15. Y.-G. Kim, **J. H. Baricuatro**, A. Javier, M. P. Soriaga. “Tuning the CO-Reduction Product Distribution by Structural Modification of the Cu Electrode Surface.” ECS Transactions 75 (2017) 87–97.
16. Y.-G. Kim, A. Javier, **J. H. Baricuatro**, D. Torelli, K.D. Cummins, C.F. Tsang, J.C. Hemminger, M. P. Soriaga.

- “Surface Reconstruction of Pure-Cu Single-crystal Electrodes under CO-reduction Potentials in Alkaline Solutions: A Study in Seriatim ECSTM-DEMS.” *Journal of Electroanalytical Chemistry* 780 (2016) 290–295.
17. Y.-G. Kim, A. Javier, **J. H. Baricuatro**, M. P. Soriaga. “Regulating the Product Distribution of CO Reduction by the Atomic-Level Structural Modification of the Cu Electrode Surface.” *Electrocatalysis* 7 (2016) 391–399.
 18. **J. H. Baricuatro**, F. H. Saadi, A. I. Carim, J. M. Velazquez, Y.-G. Kim, M. P. Soriaga. “Influence of Redox-Inactive Cations on the Structure and Electrochemical Reactivity of Synthetic Birnessite, a Heterogeneous Analog for the Oxygen-Evolving Complex.” *Journal of Physical Chemistry C* 120 (2016) 15618–15631.
 19. A. Javier, B. Chmielowiec, J. Sanabria-Chinchilla, Y.-G. Kim, **J. H. Baricuatro**, M. P. Soriaga. “A DEMS Study of the Reduction of CO₂, CO, and HCHO Pre-adsorbed on Cu Electrodes: Empirical Inferences on the CO₂RR Mechanism.” *Electrocatalysis* 6 (2015) 127–131.
 20. A. Javier, **J. H. Baricuatro**, Y.-G. Kim, M. P. Soriaga. “Overlayer Au-on-W Near-Surface Alloy for the Selective Electrochemical Reduction of CO₂ to Methanol: Empirical (DEMS) Corroboration of a Computational (DFT) Prediction.” *Electrocatalysis* 6 (2015) 493–497.
 21. Y.-G. Kim, **J. H. Baricuatro**, A. Javier, J. M. Gregoire, M. P. Soriaga. “The Evolution of Polycrystalline Copper Surface, First to Cu(111) and then to Cu(100), at a Fixed CO₂RR Potential: A Study by Operando EC-STM.” *Langmuir* 30 (2014) 15053–15056.
 22. M. P. Soriaga, **J. H. Baricuatro**, K. D. Cummins, Y.-G. Kim, F. H. Saadi, G. Sun, C. C. L. McCrory, J. R. McKone, J. M. Velazquez, I. M. Ferrer, A. I. Carim, A. Javier, B. Chmielowiec, D. C. Lacy, J. M. Gregoire, J. Sanabria-Chinchilla, X. Amashukeli, W. J. Royea, B. S. Brunshwig, J. C. Hemminger, N. S. Lewis, J. L. Stickney. “Electrochemical surface science twenty years later: Expeditions into the electrocatalysis of reactions at the core of artificial photosynthesis.” *Surface Science* 631 (2015) 285–294.
 23. F. H. Saadi, A. I. Carim, J. M. Velazquez, **J. H. Baricuatro**, C. L. McCrory, M. P. Soriaga, N. S. Lewis. “Operando Synthesis of Macroporous Molybdenum Diselenide Films for Electrocatalysis of the Hydrogen-Evolution Reaction.” *ACS Catalysis* 4 (2014) 2866–2873.
 24. B. Chmielowiec, F. Saadi, **J. H. Baricuatro**, A. Javier, Y.-G. Kim, G. Sun, M. Y. Darensbourg, M. P. Soriaga. “Molecular Catalysis that Transpires Only when the Complex is Heterogenized: Studies of a Hydrogenase Complex Surface-Tethered on Polycrystalline and (111)-Faceted Gold by EC, PM-FT-IRRAS, HREELS, XPS and STM.” *Journal of Electroanalytical Chemistry* 716 (2014) 63–70.
 25. J. C. Sharp, X. F. Feng, J. A. Farmer, Y. X. Guo, F. Bebensee, **J. H. Baricuatro**, E. Zillner, J. F. Zhu, H.-P. Steinrück, J. M. Gottfried, and C. T. Campbell. “Calcium Thin Film Growth on Polyfluorenes: Interface Structure and Energetics.” *Journal of Physical Chemistry C* 118 (2014) 2953–2962.
 26. J. C. Sharp, F. Bebensee, **J. H. Baricuatro**, H.-P. Steinrück, J. M. Gottfried, C. T. Campbell. “Calcium Thin Film Growth on a Cyano-Substituted Poly(p-phenylene vinylene): Interface Structure and Energetics.” *Journal of Physical Chemistry C* 117 (2014) 23781–23789.
 27. J. Sanabria-Chinchilla, A. Javier, D. Crouthers, **J. H. Baricuatro**, M. Y. Darensbourg, M. P. Soriaga. “Immobilization-enabled Proton Reduction Catalysis by a Di-iron Hydrogenase Mimic.” *Electrocatalysis* (2014) 5(1) 5–7.
 28. **J. H. Baricuatro**, C. B. Ehlers, K. D. Cummins, J. L. Stickney, Y.-G. Kim, M. P. Soriaga. “Structure and Composition of Cu(*hkl*) Surfaces Exposed to O₂ and Emerged from Alkaline Solutions: Prelude to UHV-EC CO₂RR Studies at Well-defined Copper Catalysts” *Journal of Electroanalytical Chemistry* 716 (2014) 101–105.
 29. **J. H. Baricuatro**, J. C. Soto, K. D. Cummins, M. P. Soriaga. “High-resolution Electron Energy Loss Spectroscopy of Anions Chemisorbed on Electrode Surfaces: The Effect of Counter Cations.” *Electrochemistry Communications* 27 (2013) 176–179.
 30. A. Javier, Y.-G. Kim, **J. H. Baricuatro**, P. Balbuena, M. P. Soriaga. “The Structure of Benzoquinone Chemisorbed on Pd(111): Simulation of EC-STM Images and HREELS Spectra by Density Functional Theory.” *Electrocatalysis* 3 (2012), 353–359.
 31. **J. H. Baricuatro**, Y. S. Park, M. A. Hossain, M. P. Soriaga. “UHV-EC Studies of Ultrathin Pd Films on Pt(111): 2.Electrodeposition by Potentiodynamic Method”. *The Philippine Scientist* 48 (2011) 1.
 32. J.A. Farmer, **J. H. Baricuatro**, C. T. Campbell. “Ag Adsorption on Reduced CeO₂ (111) Thin Films”. *J. Phys. Chem. C* 114 (2010) 17166–17172.
 33. **J. H. Baricuatro**, Y. S. Park, M. A. Hossain, M. P. Soriaga. “UHV-EC Studies of Ultrathin Pd Films on Pt(111): 1.Electrodeposition by Potentiostatic Method”. *The Philippine Scientist* (2010) vol. 47.
 34. A. Visintin, C. Wang, **J. H. Baricuatro**, M. P. Soriaga. “Electrochemical Hydrogen Storage” in Vijay G. Singh (Ed.) *Applied Electrochemistry* (2010), Nova Science Publishers, Inc. ISBN: 978-J-60876-208-8.
 35. **J. H. Baricuatro**, M. A. Hossain, Y. S. Park, M. P. Soriaga. “UHV-EC Characterization of Ultrathin Films

- Electrodeposited on Well-Defined Noble Metals. I: Pd on Pt(111)". *Electrocatalysis* 1 (2010) 28–33.
36. **J. H. Baricuatro**, M. P. Soriaga. "UHV-EC Characterization of Ultrathin Films Electrodeposited on Well-Defined Noble Metals. II: Co on Pd(111)". *Electrocatalysis* 1 (2010) 34–41.
 37. **J. H. Baricuatro**, M. P. Soriaga. "UHV-EC Characterization of Ultrathin Films Electrodeposited on Well-Defined Noble Metals. III: Bi on Pd(111)". *Electrocatalysis* 1 (2010) 42–50.
 38. F. Bebensee, J. Zhu, **J. H. Baricuatro**, J. A. Farmer, Y. Bai, H.-P. Steinrück, C. T. Campbell, J. M. Gottfried. "Interface Formation between Calcium and Electron-irradiated Poly(3-hexylthiophene)". *Langmuir* 26 (2010) 9632–9639.
 39. A. Visintin, C. Wang, **J. H. Baricuatro**, M. P. Soriaga. "Electrochemical Hydrogen Storage" in W.H. Lee and V.G. Cho (Eds.) *Handbook of Sustainable Energy* (2009), Nova Science Publishers, Inc. ISBN: 978-I-60876-263-7.
 40. J. Zhu, F. Bebensee, W. Hieringer, W. Zhao, **J. H. Baricuatro**, J. A. Farmer, Y. Bai, H. P. Steinrück, J. M. Gottfried, C. T. Campbell. "Formation of the Calcium/Poly(3-Hexylthiophene) Interface: Structure and Energetics". *Journal of the American Chemical Society* 131 (2009) 13498–13507.
 41. H. A. Peretti, A. Visintin, M. P. Soriaga, **J. H. Baricuatro**. "Clean and Renewable Energy: Non-Conventional Approaches to Hydrogen Storage". *The Philippine Scientist* 46 (2009) 1–16.
 42. Y.-S. Park, **J. H. Baricuatro**, M. A. Hossain, M. P. Soriaga. "Interfacial Structure and Chemistry of Potentiodynamically Electrodeposited Ultrathin Pd Films on Pt(111)." *Electrochemical Society (ECS) Transactions* 19 (2009) 25–42.
 43. M. P. Soriaga, **J. H. Baricuatro**, N. Batina (Eds.). "Electrochemical Surface Science: Recent Advances in the Study of the Electrode-Electrolyte Interface". The Electrochemical Society: NJ (2007).
 44. A. Carrasquillo Jr., **J. H. Baricuatro**, M. Hossain, Y. S. Park, J. J. Jeng, M. P. Soriaga. "The Interaction of Bromide Ions with Pd(100) Single-Crystal Electrode Surfaces: Studies by UHV-EC". *Electrochemical Society (ECS) Transactions* 3 (2007) 169–186.
 45. P. Kar, K. Cummins, J. H. Baricuatro, M. Hossain, K. Li, M. P. Soriaga. "Molecular Chemisorption at Electrocatalyst Surfaces." *Electrochemical Society (ECS) Transactions* 2 (2007) 187–211
 46. Y.S. Park, **J. H. Baricuatro**, M. A. Hossain and M. P. Soriaga. "Highly-Ordered Ultrathin Pd Films on Pt(111): Electrodeposition and Structural Characterization". *Electrochemical Society (ECS) Transactions* 3 (2007) 65–103.
 47. J. Sanabria-Chinchilla, **J. H. Baricuatro**, M. P. Soriaga, F. Hernandez, H. Baltruschat. "Electrocatalytic Hydrogenation and Oxidation of Aromatic Compounds Studied by DEMS: Benzene and *p*-dihydroxybenzene at Ultrathin Pd films Electrodeposited on Au(*hkl*) Surfaces". *J. Coll. Interfac. Sci.* 314 (2007) 152–159.
 48. **J. H. Baricuatro**. "Electrodeposition of Ultrathin Pd, Co and Bi Films on Well-defined Noble-metal Electrodes: Studies by UHV-EC". Ph. D. Dissertation. Texas A&M University: TX (2006).
 49. Y.-G. Kim, **J. H. Baricuatro**, M. P. Soriaga. "Molecular Adsorption at Well-defined Electrode Surfaces: Hydroquinone on Pd(111) Studied by EC-STM". *Langmuir* 22 (2006) 10762–10765.
 50. C. S. Wang, M. Marrero-Cruz, **J. H. Baricuatro**, M. P. Soriaga, D. Serafini and S. Srinivasan. "Self-discharge Mechanisms of AB₅-type Hydride Electrode Used for Ni/MH Battery". *Int. J. Hydrogen Energy.* 31 (2006) 603–611.
 51. C. S. Wang, M. Marrero-Cruz, **J. H. Baricuatro**, M. P. Soriaga, D. Serafini, S. Srinivasan. "Corrosion Behaviour of AB₅-type Hydride Electrodes". *J. App. Electrochem.* 33 (2003) 325–331.
 52. Y.-G. Kim, X. Chen, Y.-S. Park, **J. H. Baricuatro**, J. Sanabria-Chinchilla, M. P. Soriaga. "Surface Organometallic Chemistry of Well-defined Pd Electrodes". *J. Arg. Chem. Society.* 91 (2003) 1–22.
 53. Y.-G. Kim, **J. H. Baricuatro**, M. P. Soriaga, D.W. Suggs. "Adsorbate-induced Disorder-to-order Surface Reconstruction: Iodine on Pd(111) Revisited by EC-STM" *J. Electroanal. Chem.* 509 (2001) 170–174.

POSTER AND ORAL PRESENTATIONS

1. V. Salim, J. H. Baricuatro, et al. "Development of Multifaceted Strategies in Elucidation of Anticancer Plant Natural Product Biosynthetic Pathways." 212st LBRN Annual Meeting, LSU School of Veterinary Medicine, Jan 20-21, 2023.
2. J. H. Baricuatro, "Surface Science Studies of Artificial Photosynthesis in the Dark: Heterogeneous Electrocatalysis of CO₂-to-Fuel Conversion." University of San Carlos, Cebu, Philippines, July 16, 2019.
3. J. H. Baricuatro, "Adsorption of CO on Cu(100) in Alkaline Solution at CO₂-Reduction Potentials: *Operando* Studies by *seriatim* ECSTM-DEMS-ECPMIRS." Third International Conference on Catalysis and Chemical Engineering Conference, Houston, TX, February 25-27, 2019.

4. J. H. Baricuatro, "Birnessite as Structural Motif for the Development of Oxygen Evolution Reaction (OER) Electrocatalysts." Pacificchem 2015, Artificial Photosynthesis: Bio-inspired Chemistry for Solar Fuel Production, Honolulu, HI, December 17, 2015.
5. J. H. Baricuatro, "Heterogeneous Catalysis in Solar-fuel Generation from Photoelectrochemical Cells: Lessons from Natural and Artificial Photosyntheses." University of San Carlos, Cebu, Philippines, February 17, 2014.
6. J. H. Baricuatro, "Electrochemical Annealing of Well-defined Ultrathin Pd Films on Pt(111)." 26th Philippine Chemistry Congress, Cebu, Philippines, April 2011.
7. J. H. Baricuatro, J. Farmer, E. Zillner, J. F. Zhu and C. T. Campbell. "Metal/Polymer Interfaces: Ca on Polyfluorenes." American Vacuum Society International Symposium, Boston, MA, October 2008.
8. J. H. Baricuatro, J. Farmer and C. T. Campbell. "Adsorption Energetics of Ag on CeO₂(111)." American Vacuum Society (AVS) International Symposium, Seattle, WA, October 2007.
9. J. H. Baricuatro, J. Farmer and C. T. Campbell. "Metal Adsorption on Well-defined Oxide Support: Studies by Single-crystal Microcalorimetry and Electron Spectroscopy." International Symposium on Relations between Homogeneous and Heterogeneous Catalysis, University of California, Berkeley, July 2007.
10. J. H. Baricuatro. "Interfacial Electrochemistry of Ultrathin Bi Films on Pd(111) Surfaces." Industry-University Cooperative Chemistry Program (IUCCP) Symposium. Texas A&M University. October 2005.
11. J. H. Baricuatro. "Interfacial Chemistry of Pd(*hkl*) Single-crystal Electrodes in Aqueous Chloride Solutions: Studies by UHV-EC." American Chemical Society National Meeting, New Orleans, LA. March 2003.

STUDENT PROJECTS AND PRESENTATIONS

Projects

Spring 2022

Jayden Williams. Electrochemical annealing of gold electrodes in neutral electrolyte solutions
 Michael Minameyer. Complexometric interactions of malachite green and arsenic(III)
 Tiffany Longstratt. Development of an instructional video on the law of definite proportions

Fall 2022

Carl Lindsey. Arsenic-binding capacity of *Salvinia molesta* biomass

Fall 2023

Kevin Brown. Waste-to-chemical upcycling of urea at electrified Au/solution interfaces
 Jonnae Norals. Solvent-solvent extraction of cuproine perchlorate

Spring 2024

Kevin Brown. Waste-to-chemical upcycling of urea at electrified Au/solution interfaces
 Colton James. Voltammetric activation of aqueous cyanate ions at gold surfaces
 Jeremy Gill. pH and perchlorate ion concentration of aqueous extracts of soil from Colfax, LA

Summer 2024

Kevin Brown. Waste-to-chemical upcycling of urea at electrified Au/solution interfaces
 Jeremy Gill. pH and perchlorate ion concentration of aqueous extracts of soil from Colfax, LA

Fall 2024

Kevin Brown. Waste-to-chemical upcycling of urea at electrified Au/solution interfaces
 Carl Lindsey. Adsorption isotherms of *Salvinia molesta* biomass in methylene blue solutions
 Jeremy Gill. pH and perchlorate ion concentration of aqueous extracts of soil from Colfax, LA
 Tyler Christie. Green alternatives to the solvent extraction of ferroin perchlorate

Presentations

Kevin Brown. Waste-to-chemical upcycling of urea at electrified Au/solution interfaces. 9th LSUS Regional Student Scholars Forum, April 5, 2024

Colton James. Voltammetric activation of aqueous cyanate ions at gold surfaces. 9th LSUS Regional Student Scholars Forum, April 5, 2024