CURRICULUM VITAE

Gerardine G. Botte, PhD
Professor and Whitacre Endowed Chair in Sustainable Energy
Founder and Director, CASFER an NSF Engineering Research Center
Chemical Engineering Department
Whitacre College of Engineering
Texas Tech University

Education

Jun 1998-Aug 2000	Ph.D. Chemical Engineering, University of South Carolina, Columbia, SC
Aug 1996-May 1998	M.E. Chemical Engineering, University of South Carolina, Columbia, SC
Sep 1987-Dec 1993	B.S. Chemical Engineering, Universidad de Carabobo, Venezuela (5-year degree with thesis and co-op requirement)

Professional Development Training

- NSF I-Corps National, Team: Ultra-Fast COVID 19 Detection Sensor, January 2021, as a result spun off a company and raised $4 million in investment, product currently under evaluation for FDA Emergency Used Authorization. Expanding platform to other viruses and pathogens
- Accelerating Engineering Research Center Preparedness Workshop. NSF ERC Planning Grant Workshop. Washington DC, October 2018. Only for NSF ERC Planning Grant Awardees (preparation for convergence research, capacity development, successful operation and management of Engineering Research Centers). As a result, led multi-university preproposal team for a $51 million Engineering Research Center (January 2019), *invited for a full NSF Engineering Research Center proposal (January 2021) and received award (September 2022)*
- Media Interview Practicum, University Communications and Marketing, Ohio University (2018) and Texas Tech University Communications (2020)
- HERS Leadership Institute, Denver, CO. Chaired the HERS 2017 Denver Gift Campaign that successfully raised $18,000 in two weeks establishing the highest record in fundraising for a HERS class (2017)
- HERS Luce Program for Women in STEM Leadership (2017)
- Boot Camp for Industry/University Cooperative Research Centers Directors, National Science Foundation, Arlington, VA (2012)
- Innovation and Entrepreneurship: Starting a Company, Raising Money, and Putting the Team Together; TechGROWTH Ohio, Ohio University, Athens, OH (2009)
- ExCEEd (Excellence in Engineering Education) Model Teaching Workshop, American Society of Civil Engineers, University of Arkansas, Fayetteville, AR (2003)

Award and Honors (summary)

Received 54 honors and awards for academic, scholarship, research, education, entrepreneur, innovation, and service. Most recent awards and honors are summarized below.

- Ranked among top 2% of Global Researchers most-cited in the world, Stanford's University List (2020, 2021, 2022), categories: energy, chemical physics, enabling and strategic technologies.
- Outstanding Graduate Alumna Award, College of Engineering and Computing, University of South Carolina (2021)
- Elected Senior Vice President, Electrochemical Society (2022-2023)
- Elected Second Vice President, Electrochemical Society (2021-2022)
- Elected Third Vice President, Electrochemical Society (2020-2021)

- Whitacre Chair, Chemical Engineering, Texas Tech University (2019)
- Distinguished Professor, Ohio University (2015, lifetime award)
- Fellow, Electrochemical Society (2014)
- Outstanding Faculty Innovation Award South East Ohio (2014)
- Charter Fellow, National Academy of Inventors (2012)
- Fellow, of the World Technology Network (2010)
- Appointed Editor in Chief Journal of Applied Electrochemistry (2008 to present)
- Elected Chair Division 5 (Electrochemical Process Engineering and Technology), International Society of Electrochemistry (2019-2021)
- Elected Chair Elect Division 5: Electrochemical Process Engineering and Technology (2017-2019)
- Elected U.S. representative, International Society of Electrochemistry (2015-2017)
- Guest member, European Working Party on Electrochemical Engineering (invited by European peers)
- Russ Professor, Chemical and Biomolecular Engineering, Ohio University (2010-2019)

International Leadership

2008-Present International Society of Electrochemistry: Chair Division 5: Electrochemical Process Engineering and Technology (2019-2020); Chair Elect Division 5: Electrochemical Process Engineering and Technology (2017-2018); Elected US representative (2016-2017); Organizing Committee 68th Annual Conference (2015-2017, the meeting featured 5 plenary presentations, 48 keynotes, 698 oral presentations, and 325 poster presentations with 1082 participants); Chair and Co-Chair 4 International Symposia.

2008-Present Editor in Chief, Journal of Applied Electrochemistry, Springer.

1998-Present Electrochemical Society: Senior Vice President (2022-2023), Second Vice President (2021-2022), Third Vice President (2020-2021); Chair NET Award (2017-present); Board of Directors (2012-2014); Elected Chair Industrial Electrochemistry and Electrochemical Engineering Division (IEEE, 2012-2014); Elected Vice Chair IEEE (2010-2012); Elected Secretary/Treasurer IEEE (2008-2010); Member Interdisciplinary Science and Technology Subcommittee (2016-2018); ECS Fellows Awards Committee (2015); Chair Vittorio de Nora Award (2012); Member Honors and Awards Committee (2011-2013); Chair and Co-Chair 34 International Symposia.

Academic and Leadership Experience at Texas Tech University (August 2019 to present)

Texas Tech University was created by legislative action in 1923 and has the distinction of being the largest comprehensive higher education institution in the western two-thirds of the state of Texas. The university is the major institution of higher education in a region larger than 46 of the nation's 50 states and is the only campus in Texas that is home to a major university, law school and medical school. Committed to teaching and the advancement of knowledge, Texas Tech University, a comprehensive public research university, provides the highest standards of excellence in higher education, fosters intellectual and personal development, and stimulates meaningful research and service to humankind. Texas Tech University is among 131 universities and colleges in the Carnegie Classification of Institutions of Higher Education's “Very High Research Activity” category. The University also is only one of 95 public institutions listed.

Founder and Director, National Science Foundation Engineering Research Center for Advancing Sustainable and Distributed Fertilizer Production -CASFER (September 1, 2022 to present)

CASFER (https://www.casfer.us) is a National Science Foundation Engineering Research Center (ERC), established September 1, 2022. ERCs are the flagship of the NSF engineering division and are the largest award given by NSF consisting of $51million to address problems with significant society impact. CASFER is led by Texas Tech University (TTU) in partnership with Georgia Tech (GT), Massachusetts Institute of Technology (MIT), Case Western Reserve University (CWRU), and Florida Mechanical and Agricultural University (FAMU). Dr. Botte is the founder, Principal Investigator, and Director of CASFER.

CASFER strives to solve one of the most pressing problems facing humankind, how do we feed the growing world population while protecting and sustaining our environment? By 2050, the world population will exceed 10.5 billion, increasing the demand for food by 70%, with only an additional 10% land available for agriculture. To meet this demand, nitrogen-based fertilizers (NBFs) are required for the formation of plant proteins. Currently, more than 50% of the world population is supported by synthetic NBFs, produced via the Haber-Bosch process (HB) a carbon intensive process, however, the high volatility of prices remains a challenge in the US and developing countries. Furthermore, only 20% of NBFs produced translate into food with 80% lost to the environment creating significant environmental, health, and socioeconomic impact. Therefore, society requires new cost effective, resilient, and secure ways to produce NBFs with minimum environmental and socioeconomic impact.

CASFER's vision is to enable resilient and sustainable food production by developing next generation, modular, distributed, and efficient technology for capturing, recycling, and producing decarbonized nitrogen-based fertilizers. CASFER will leverage its platform technologies to recover phosphorous, nutrients and other resources from waste streams. Through CASFER research (CR), engineering workforce development program (EWD), diversity and culture of inclusion (DCI) and innovation ecosystem (IE) CASFER will lead the US toward a Nitrogen Circular Economy, fertilizer independence, an affordable and resilient price range for NBF, while sustaining and preserving the environment.

<u>Duties and Responsibilities as CASFER Director:</u>

- Reports to the National Science Foundation
- Provides vision and dynamic leadership to support the mission of CASFER
- Leads strategic planning
- Responsible for development and fundraising
- Establishes industry/university partnerships
- Advocates for faculty, students, and personnel affiliated with the Center
- Stablishes boards and connects with stakeholders to support the vision of CASFER
- Provides leadership such that the research agenda, educational, diversity and inclusion and innovation ecosystem programs are fully integrated
- Supports alignment of faculty, researchers, and students, with the required talent to execute the research portfolio of CASFER
- Supervises the administrative personnel of the center (currently 9 staff members with 2 open staff positions to fill)

Accomplishments as CASFER Director (five months since start):

- Led strategic plan and successful deliverable to the NSF of 90 days milestones
- Kicked off organization and infrastructure development with a vibrant team of research thrust leaders, innovation ecosystem director, engineering workforce development co-directors, convergence coordinator, diversity and inclusion co-directors and other affiliates.
- Engaged 87 members in the Center
- Established all Center advisory boards and successfully engaged industry members
- Kicked off research portfolio including 22 research projects
- Kicking off new academic programs among partner institutions, diversity and culture of inclusion programs, and integration of innovation ecosystem activities
- Secured five new faculty lines from TTU to work with CASFER
- Establishing philanthropic relations to support the vision and expand the infrastructure of CASFER

Department Chair, Chemical Engineering (August 2019 to September 15, 2022)

Dr. Botte joined the Whitacre College of Engineering at Texas Tech University in August of 2019 to lead the Chemical Engineering Department as the Whitacre Chair of Chemical Engineering. The Department of Chemical Engineering at Texas Tech University provides broad-based programs resulting in B.S., M.S., and Ph.D. degrees. With eighteen tenure-track or tenured faculty members, and two professors of practice, the department serves over 425 undergraduates and over 110 graduate students.

The department prides itself on its commitment to excellence in all areas of academics, research, innovation, service and entrepreneurship holistically integrated. Our graduate program is ranked 38th of public programs in Chemical Engineering, and our faculty scholarly productivity is ranked in the top 50 according to Academic Analytics. We also pride ourselves on a strong undergraduate curriculum with hands-on learning and pragmatic instruction from faculty with industrial experience.

In September of 2022, Dr. Botte step-down to lead the NSF Engineering Research Center, CASFER.

Duties and Responsibilities as Chair, Chemical Engineering Department at Texas Tech University:

1. Working with the Dean of the Whitacre College of Engineering to build a community of scholars through department and college activities.
2. Recruiting outstanding new hires at various ranks with clear and supportable evidence of excellence and potential for growth
3. Developing/creating an atmosphere of open and constructive exchange of ideas
4. Promoting faculty recognition particularly through outside awards
5. Evaluating each faculty member based on the given annual reports and suggesting specific areas of improvement to that faculty member consistent with the college's objectives and aspirations, and that person's professional goals
6. Identifying, based on the instruments that department uses for assessment, areas of improvement in both the graduate and the undergraduate (ABET) programs
7. Mentoring tenured and untenured faculty to improve teaching, research, and scholarship. As part of this, significantly increase external research dollars and the number of PhDs granted.
8. Mentoring staff to maximize their efficiencies while helping them reach their career goals
9. Increasing undergraduate quality standards and actively support the recruiting of both high quality undergraduate and top-rated graduate students
10. Actively promoting activities that increase diversity in the college faculty, student populations, and staff.

11. Make a demonstrative change, each biennium, in your departments ranking (USWR)

Accomplishments as Department Chair:

- Developed a shared vision (in conjunction with faculty, staff, students, alumni, and College Administrators) to lead the department to be globally renown for excellence in engineering, discovery and innovation
- Successfully transitioned the department into a combination of multiple modes of education to pivot during the COVID-19 pandemic
- Developed and executed strategies for undergraduate and graduate recruitment, as a result undergraduate student population increased by 14.5% and the graduate population increased by 19%
- Worked with Graduate School and faculty in the chemical engineering department to create the ChE online MS program
- Modified curriculum content to promote an accelerated Master of Engineering Program with emphasis in industrial experience, including internship opportunities for participants
- Catalyzed and supported faculty on pursuing external funding applications. During Botte's tenure, restrictive research expenditures increased by 40% in three years, department doubled number of total $ awards, in 2020-2021 the department established record in total $ requests ($71 million) and $ requests per faculty. In year 2022, the department established record in RRE (over $3.6M). Dr. Botte led an effort to establish a National Science Foundation Engineering Research Center, which crystalized in 2022. ***This new award has positioned the ChE department to establish records in RRE in next 5 years, with projected RRE reaching over $6.6M, $8.1M and $9.6M in years 2023, 2024, and 2025, respectively***
- Enhanced training and support for faculty and graduate students towards publications, in 2020-2021 the department established record in publications since 1998
- Created and implemented curriculum changes for the undergraduate program including: (1) integration into the first-year common engineering course, (2) development of electives in the program that focus on energy and sustainability, entrepreneurship, computational thinking, data science, and research
- Worked with faculty in the department to implement changes in the graduate program to enhance administration of qualifier exam, enhance research and academic experience, and increase number of publications and presentations led by graduate students
- Led multidisciplinary team with partner Universities that led to a National Science Foundation Engineering Research Center award. Steps included preproposal (Oct 2020), full proposal (January 2021, invited from 200 preproposals), site visit (February 2022, invited from 20 full proposals), and blue ribbon (March 2022). Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER). Botte is PI, TTU is the lead, submitted January April 2021 in collaboration with other partner institutions including Massachusetts Institute of Technology, Case Western Reserve University, Georgia Tech, University of South Carolina, and FA&MU. This is a comprehensive initiative including vision, research, education and workforce development, a culture of diversity and inclusion, and innovation ecosystem and a strong and innovative management plan
- Secured internal resources to modify the operational infrastructure of the department to support the new vision and the research, teaching, entrepreneurship and service productivity goals
- Coordinated and delivered the six-year Graduate program review for the Department
- Recruited, attracted, and retained personnel. Hired four assistant professors, maintained competitive salaries at the national level and ensured inclusive and diverse distribution of resources

- Raised industrial funds and established the community of scholars (to support research led by undergraduate students in collaboration with graduate students and mentored by a faculty member, a vertical integrated program) and the Computational Thinking Club
- Raised in average $150,000 per year for the Chemical Engineering Department. Participated in fundraising activities to support the Whitacre College of Engineering and TTU. Current organizational structure does not allow Department Chairs to lead more activities in fundraising
- Mentored junior faculty for successful development towards tenure and promotion

Academic and Leadership Experience at Ohio University (2002 to July 2019)
Established in 1804, Ohio University is the oldest public institution of higher learning in the state of Ohio and the first in the Northwest Territory. Admission to Ohio University is granted to the best-qualified applicants as determined by a selective admission policy.

Developed academic career at Ohio University, from assistant professor to University Distinguished Professor (highest honor a faculty can achieve at the University). Duties and responsibilities: teaching, research, and services. Leadership and Administration: Founder and Center Director.

March 2015-July 2019 Distinguished Professor of Chemical and Biomolecular Engineering, Ohio University

September 2009-July 2019 Professor of Chemical and Biomolecular Engineering, Ohio University

September 2009-July 2019 Founder and Director Center for Electrochemical Engineering Research (CEER)

March 2014-July 2019 Founder and Director Consortium for Electrochemical Processes and Technology (CEProTECH)
CEER (https://www.ohio.edu/engineering/ceer/) is a flagship of Ohio University, nationally and internationally recognized as a Center of Excellence leading the development of advanced electrochemical technologies with applications in hydrogen production (unconventional electrolysis), electrochemical water remediation, electro-synthesis of petrochemicals, sensors (including wearable), advanced batteries, and fuel cells. CEER's primary goals are four-fold: (1) Combine all branches of electrochemical engineering into one research center where more viable, marketable, and holistic solutions can be found for problems facing industry, the public sector, and society at large; (2) Provide current and future generations of electrochemical engineers with the tools to develop and bring to market new electrochemical technologies; (3) Disseminate scientific knowledge on electrochemistry and electrochemical technologies; and (4) Help develop the local, national, and global economy. The educational mission of CEER is to contribute to the education of the future generation of undergraduate and graduate electrochemical engineering students, and to attract a new generation of students into electrochemical engineering, engineering, math, and science. CEER has taken the lead in outreach programs at the local, national, and international level.

CEER is also the home of the Consortium for Electrochemical Processes and Technology (CEProTECH http://ceprotech.com) established in March 2014 with the support of an NSF I/UCRC Center grant. CEProTECH is dedicated to the improvement of chemical and biological processes utilizing novel, electrochemically-focused approaches. Due to recent technological advancements and a changing economic climate, electrochemical technologies and processes now represent a relatively untapped frontier of opportunity for unique, enabling, and transformative solutions. CEProTECH develops solutions by advancing fundamental and cross-cutting electrochemical research to explore enhancements, alternatives and analogues for classical chemical and biological process, especially in advanced production and manufacturing applications.

Duties and Responsibilities as Center Director and Director of Industry Driven Consortium:

- Provides vision and dynamic leadership to the research and academic mission of the center
- Develops and implements vision
- Is responsible for development and fundraising
- Establishes industry/university partnerships
- Advocates for faculty, students, and personnel affiliated with the Center
- Identifies areas of opportunity and establishes cooperation among multidisciplinary groups (internal and external)
- Is responsible for the budget and financial health of the Center
- Promotes economic growth and develops strategies to support an integrated ecosystem that enables cooperation among industry, faculty, researchers, students, and community engagement
- Develops educational and outreach programs
- Establishes multidisciplinary programs involving faculty, industry, federal and state agencies
- Supervises the personnel of the center and mentors junior faculty; graduate and undergraduate students
- Maintains the research scope and vision of the consortium
- Recruits new members for the consortium
- Manages the research portfolio of the consortium
- Manages the budget and resources of the consortium
- Aligns faculty, researchers, and students, with the required talent to execute the research portfolio of the consortium
- Serves as a liaison between industry members, faculty, students, and research staff
- Supervises the personnel of the center (varies ~28-20 people). CEER executes contract projects that requires different type of expertise (at times have supervised up to 28 people, including 15 graduate students).

Accomplishments as Center Director:

- Led multidisciplinary team with partner Universities that successfully secured a planning grant for a National Science Foundation Engineering Research Center for *In-Situ* Control of the Nitrogen Cycle (September 2018, project selected from 400 applications). Developed preproposal (Botte is PI, OHIO is the lead, submitted January 2019) in collaboration with other partner institutions including Case Western Reserve University, Georgia Tech, University of South Carolina, FA&MU, and international Universities (Anand Agricultural University, India). Proposal included a convergence team of 27 investigators
- Developed (in conjunction with an advisory board) and executed the strategic vision for the Center for Electrochemical Research that led to the first National Science Foundation Industry University Cooperative Research Center in Electrochemical Processes; Center graduated and currently operates as a Consortium for Electrochemical Processes and Technology
- Developed and implemented novel approaches for technology commercialization
- Raised the funds and expanded the infrastructure for the Center and moved from a 4,000 sq. ft disperse space into a dedicated 20,000 sq ft building
- Created research positions such as senior scientists, engineers, and support administrators for the Center
- Established the Ohio University CEER user's facilities for equipment and instrumentation that provides supports to researchers and academic programs from different colleges at the University, as well as companies, and external users.

- Raised funds for the Center (federal, state, and industry sponsors) and managed the budget of the Center (~$1.8-2.7 million per year; this number varies annually based on federal funds and grants secured)
- Led multidisciplinary and multi-university teams in major research programs including: Energy Frontier Research Center, NSF Engineering Research Center, NSF Engineering Research Center Planning Grant, NSF Industry University Cooperative Research Center, and NASA Space Technology Research Institute
- Catalyzed and supported faculty and research staff on pursuing external funding applications. From 2010 to 2016 at least 73 grant applications were submitted for a total of total of $46.1 million, resulting in 26 successful applications totalizing $8.8 million in external funding
- Established and strengthen collaboration with multidisciplinary groups from different Colleges and Departments at Ohio University to advance the research and scholarly mission of the Center. At least 19 faculty from different departments and colleges collaborate with the Center: physics and astronomy, electrical engineering; chemistry and biochemistry, chemical and biomolecular engineering, civil engineering, industrial engineering, mechanical engineering, biological sciences, osteopathic school of medicine, Patton College of Education; Voinovich School of Leadership and Public Affairs, Center for Entrepreneurship, and College of Business
- Recruited, attracted, and retained personnel to work with the Center and Ohio University; 10 people including: research professors, research engineers, post-doctoral research associates, technicians, administrator assistant, industry liaison; assistant director for operations; and assistant director for business technical development. Through mentoring and professional development opportunities, some personnel have moved within Ohio University into other leadership positions

Accomplishments in Economic Development:

- Raised investors funds to start companies to commercialize technologies

September 2006-August 2009 Associate Professor of Chemical and Biomolecular Engineering, Ohio University

September 2002-August 2006 Assistant Professor of Chemical and Biomolecular Engineering, Ohio University

Other Academic Experience (University of Minnesota Duluth and University of South Carolina)

January 2001-June 2002 Assistant Professor, Chemical Engineering, University of Minnesota Duluth, Duluth, MN.
The University of Minnesota Duluth is part of the University of Minnesota System focused on students learning and growing through experience, critical inquiry, and interaction with other learners. Offers undergraduate and some select MS programs. Focused was placed in teaching, service with minimum required research. Accomplishments: Engaged three undergraduate students in research. Secured industrial grant from Solvay to study the thermal decomposition of electrolytes for lithium ion batteries.

August-December 2000 Post-Doctoral Research Associate, University of South Carolina, Columbia, SC.
Worked under the direction of Dr. Ralph E. White; Distinguished scientist and Professor at the University of South Carolina. Duties and responsibilities: research and proposal development.
Accomplishments: Performed mathematical modeling of Lithium-Ion batteries. Used of multiple parameter estimation techniques to calculate kinetic parameters for the lithium intercalation

reactions of anode and cathode materials, and to estimate solid diffusion coefficients and activity coefficients of these materials. Published first paper that demonstrated the effect of changes in the solid diffusion coefficient in the thermal and electrochemical performance of a lithium ion battery. Wrote proposal and secured proposal for $400,000 for Dr. White from the National Reconnaissance Office (NRO).

Entrepreneurial and Industrial Experience

July 2020-Present Founder and Chief Technology Officer, EviroTech LLC. EviroTech is a spin-off of Dr. Botte's technologies related to diagnostic devices for COVID-19.

July 2017-May 2019 Co-Founder and Chief Technology Advisor, Ambreon LLC
Ambreon LLC is a spin-off company from Dr. Botte's technologies related to the removal of ammonia and nitrates from wastewater. The company was established to commercialize this technology within the wastewater treatment market. My role in the company is as Co-Founder and a contractor acting as Chief Technology Advisor. Duties include: i. Provide guidance in the technical implementation of new and OU Licensed Technology and/or its implementation vis a vis competitive technologies; ii. Provide strategic direction and company vision relating to technology; iii. Assist to promote the sales and marketing of products and services; iv. Provide guidance in the development of New Technologies; v. Attend Board of Advisors meetings.
Accomplishments: Developed manufacturing plan for the company, capital and operational cost structure; negotiated/engaged first industrial site application.

January 2008-March 2016 Founder and Chief Technology Officer, E3 Clean Technologies Inc., Athens, OH
Founder and Chief Technology Officer, E3 Clean Technologies Inc. E3 was a spin-off of Ohio University with the objective of commercializing and deploying Dr. Botte's technology related to selective catalytic reduction for industrial and diesel automotive applications. Accomplishments: Secured the first round of investment for the company ($1 million); Established the Board of Directors; Hired the Chief Operating Officer of the Company; Hired the engineering and development team.

June 1998 to August 2000 Graduate Student Intern, Celgard, Charlotte, NC
Celgard is a global leader in the development and production of high-performance membrane separator technology for batteries. Duties: research and development for new products. Accomplishments: Performed thermal stability studies of electrolytes, cathode and anode materials for secondary lithium batteries. Designed AA lithium ion batteries and performed different studies to develop new products for the company.

January 1994 to May 1998 Process Engineer, Petroquimica de Venezuela, El Tablazo, Venezuela
Petrochemical of Venezuela (http://www.pequiven.com) is the premier petrochemical company in Venezuela. It is a filial of Petroleos de Venezulea. Duties: process design, optimization, and improvent to the vynils production plant (VCM). Received permission for a two-year leave from the company to perform Master of Engineering at the University of South Carolina (June 1996-May 1998). Resigned to the company to pursue a PhD at the University of South Carolina.
Accomplishments: Determined the optimum operational point of the Drying System for Polyvinyl Chloride (PVC) dispersion grade (August 1995). The new operational point obtained generated revenues to the company in the order of $1.8 million/year. The quality of the product after the change in the operational conditions was the best reported in 20 years of operation of the plant. Developed the Quality Plan for PVC suspension grade. Developed operational procedures used for the ISO-

9000 certification of the PVC suspension product. Developed programs to control the conversion, mass balance and energy balance in the PVC and VCM (Vinyl Chloride Monomer) plants. Performed inspection activities during annual shut down of the VCM/PVC plants.

Publications (Summary)
Authored and co-authored 208 publications (h-index 41; 7021 citations, i10-indes 90, Google scholar citations) distributed as follows:

- 91 publications in peer-reviewed journals
- 5 book chapters
- 61 granted patents (21 in the US, 4 in Canada, 4 in Japan, 5 in China, 1 in Korea, and 26 in other countries)
- 34 pending patents
- 11 peered-reviewed conference proceedings
- 7 reports/special publications.

Journals:

1. Behnaz Jafari, Carla Lacerda, **Gerardine G. Botte**, "Facile Electrochemical Preparation of Hydrophobic Antibacterial Fabrics using Reduced Graphene Oxide/Silver Nanoparticles", *ChemElectroChem,* e202201111, https://doi.org/10.1002/celc.202201111 (2023).
2. Maasoomeh Jafari, **Gerardine G. Botte**, "Electrochemical Valorization of Waste Activated Sludge for Short-Chain Fatty Acids Production", *Frontiers in Chemistry,* https://doi.org/10.3389/fchem.2022.974223 (2022).
3. Ozhan Gecgel, Ashwin Ramanujam, **Gerardine G. Botte**, "Selective Electrochemical Detection of SARS-CoV-2 Using Deep Learning", Viruses, 14 (9), 1930 (2022). **https://doi.org/10.3390/v14091930**
4. Fei Lu, Ozhan Gecgel, Ashwin Ramanujam, **Gerardine G. Botte**, "SARS-CoV-2 Surveillance in Indoor Air Using Electrochemical Sensor for Continuous Monitoring and Real-Time Alerts", Biosensors, 12 (7), 523 (2022). https://doi.org/10.3390/bios12070523
5. Ping Yu, Ruheng Zheng, Hongze Ma, Jim Z. Zhang, **Gerardine G. Botte**, "Novel Pt-Ni electrocatalyst for coal electrolysis for hydrogen production", *Journal of the Electrochemical Society,* **169,** 044514 (2022). https://iopscience.iop.org/article/10.1149/1945-7111/ac61bc/meta
6. Aliakbar Yazdani, Mohan Sanghadasa, **Gerardine G. Botte**, "Integration of ceramic felt as separator/electrolyte in lithium salt thermal batteries and the prospect of rechargeability", Journal of Power Sources, **521**, 230967 (2022). https://doi.org/10.1016/j.jpowsour.2021.230967
7. Ashwin Ramanujam, Sharilyn Almodovar, and **Gerardine G. Botte**, "Ultra-Fast Electrochemical Sensor for Point-of-Care COVID-19 Diagnosis Using Non-Invasive Saliva Sampling", Processes, **9**, 1236 (2021). https://doi.org/10.3390/pr9071236
8. Behnaz Jafari, Madhivanan Muthuvel, and **Gerardine G. Botte**, "Nickel-based electrochemical sensor with a wide detection range for measuring hydroxyl ions and pH sensing," *Journal of Electroanalytical Chemistry*, **895**, 115547 (2021). https://doi.org/10.1016/j.jelechem.2021.115547
9. Esther F. Grossman, Damilola A. Daramola; **Gerardine G. Botte**, "Comparing B3LYP and B97 dispersion-corrected functionals for studying adsorption and vibrational spectra in nitrogen reduction", *Chemistry Open,* **10***,* 316 (2021) https://doi.org/10.1002/open.202000158 .
10. Ashwin Ramanujam, Bertrand Neyhouse, Rebecca A. Keogh, Madhivanan Muthuvel, Ronan K. Carroll, **Gerardine G. Botte**, "Rapid electrochemical detection of Escherichia coli using

nickel oxidation on a rotating disk electrode", *Environmental Science: Water Research & Technology,* **411,** 128453 https://doi.org/10.1016/j.cej.2021.128453 (2021).
11. R. Fernandez-Loyola, M. Muthuvel, A. B. Hernández-Maldonado, J. A. Menchaca-Rivera, J. f. Perze-Robles, O. Solorza-Feria, Gerardine G. Botte, Nanocomposites of multiwalled carbon nanotubes with encapsulated cobalt, Ceramics International, 47, 13604 (2021). https://doi.org/10.1016/j.ceramint.2021.01.219
12. Ping Yu, Junchao Ma, Rong Zhang, Jim Z. Zhang, **Gerardine G. Botte**, "Novel Pd-Cr electrocatalyst with low Pd content for coal electrolysis for hydrogen production", *Journal of Power Sources,* **483,** 229175 (2021). https://doi.org/10.1016/j.jpowsour.2020.229175
13. Xiang Lyu, **Gerardine G. Botte**, "Investigation of factors that inhibit furfural production using metal chloride catalysts", *Chemical Engineering Journal,* **403,** 126271 (2021). https://doi.org/10.1016/j.cej.2020.126271
14. Maasoomeh Jafari, **Gerardine G. Botte**, "Electrochemical Treatment of Sewage Sludge and Pathogen Inactivation", *Journal of Applied Electrochemistry,* https://link.springer.com/article/10.1007/s10800-020-01481-6 (2020).
15. Aliakbar Yazdani, **Gerardine G. Botte**, "Perspectives of Electrocatalysis in the Chemical Industry: A Platform for Energy Storage", *Current Opinion in Chemical Engineering,* **29:89-95** (2020). 10.1016/j.coche.2020.07.003
16. Aliakbar Yazdani, Mohan Sanghadasa, **Gerardine G. Botte**, "Ionic conductivity and thermal stability of lithium salt / potassium bifluoride electrolytes for thermal batteries", *Journal of Power Sources,* **453**, 227854 (1-9) (2020). https://doi.org/10.1016/j.jpowsour.2020.227854
17. Bahar Moradi, Dan Wang, and **Gerardine G. Botte**, "Carbon-Coated Fe_3O_4 Nanospindles as Solid Electrolyte Interface for Improving Graphite Anodes in Lithium Ion Batteries," *Journal of Applied Electrochemistry* **50**, 321-331(2020).
18. Ping Yu, Junchao Ma, Rong Zhang, Jim Z. Zhang, **Gerardine G. Botte**, "Novel carbon fiber supported Pt-Co electrocatalyst for coal electrolysis for hydrogen production", *Journal of the Electrochemical Society,* **166,** E395-E400 (2019). 10.1149/2.0521913jes
19. M Beltrán-Gastélum, MI Salazar-Gastélum, JR Flores-Hernández, **Gerardine G. Botte**, S Pérez-Sicairos, T Romero-Castañon, E Reynoso, RM Félix-Navarro. Pt-Au Nanoparticles on Graphene for Oxygen Reduction Reaction: Stability and Performance on Proton Exchange Membrane Fuel Cell, *Energy*, **181**, 1225-124 (2019). https://doi.org/10.1016/j.energy.2019.06.033
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2. Electrochemical Manufacturing in the Chemical Industry. **Gerardine G. Botte**. Interface, The Electrochemical Society, 49-55, fall 2014.

3. Introducing Electrochemical Engineering to Future Generations. **Gerardine G. Botte**. Interface, The Electrochemical Society, 39-43, summer 2010.

Proceedings (Full Papers):

1. Aiakbar Yazdani, Mohan Sanghadasa, **Gerardine G. Botte**, *"Ionic Conductivity and Thermal Stability of Lithium Salt/KF-HF Electrolytes for Molten Salt Batteries"*, 48th Power Sources Conference, **32-4**, 545-548, June 2018.
2. Ana Valenzuela-Muniz, Gabriel Alonso-Nunes, Miguel Miki-Yoshida, **Gerardine G. Botte**, and Ysmael Verde, "*Pt-Ru nanoparticles Supported on MWCNT as PEM fuel cell electrocatalysts*," Nanotech Conference & Expo, Houston, Texas, Technical Proceedings - Nanotechnology 2009: Biofuels, Renewable Energy, Coating Fluidics, and Compact Modeling, Volume 3, 436-438, 2009.
3. **Gerardine G. Botte**, Keeley Schneider, and Bryan K. Boggs, "*Kids Birthday Parties: Having Fun and Learning Engineering*," ASEE Annual Conference, Pittsburgh, Pennsylvania, June 2008.
4. **Gerardine G. Botte**, *"Analysis of Electro-kinetics of Ammonia Oxidation in Alkaline Media*," 206th ECS Meeting, Hawaii, Honolulu, January 2005.
5. Prashanth Patil, Yolanda De Abreu, Nilesh Sathe, Michael E Prudich, and **Gerardine G. Botte, "***Electrolysis of Coal for the Production of Hydrogen for Fuel Cell Application***,"** Proceedings of the International Technical Conference on Coal Utilization & Fuel Systems, 30th (Vol. 1), 313-319, 2005.
6. Andres I. Marquez, Yolanda De Abreu, and **Gerardine G. Botte,** *"Theoretical Investigations of Solid Oxide Fuel Cell Anode Materials*," Proceedings of the International Technical Conference on Coal Utilization & Fuel Systems, 30th (Vol. 2), 813-819, 2005.
7. **Gerardine G. Botte,** "*Modeling Volume Changes due to Lithium Intercalation in a Carbon Particle*," 204th ECS Meeting, Orlando, Florida, October 2003.
8. Frederic Vitse and **Gerardine G. Botte** "*Modeling of the Solid State Interactions During Lithium Intercalation*," 204th ECS Meeting, Orlando, Florida, October 2003.
9. Frederic Vitse, Matt Cooper, and **Gerardine G. Botte**, "*Electro-oxidation of Ammonia for the Production of Hydrogen,*" 204th ECS Meeting, Orlando, Florida, October 2003.
10. **Gerardine G. Botte**, "*The Use of Active Learning in Design of Engineering Experiments*," ASEE Annual Conference, Nashville, Tennessee, June 2003.
11. **Gerardine G. Botte**, Yuliastuti Wulandari, Ralph E. White, and Zhengming Zhang "*Effect of Water and Oxygen on the Thermal Stability of $LiPF_6$ EC:EMC Electrolyte for Lithium Ion Batteries*," 200th ECS meeting, San Francisco, California, September 2001
12. **Gerardine G. Botte** and Ralph E. White, "*Modeling the Lithium Intercalation Process in a Porous Electrode*," 196th ECS meeting, Honolulu, Hawaii, October 1999.

Presentations (Summary)

Delivered and/or authored 312 presentations, including 69 invited/keynote speaker presentations such as: Electrochemical Society Spring 2021 (Montreal, Virtual), Food-Energy-Water Symposium, AIChE 2018 (Pittsburgh, PA), Electrification 2018 (Anaheim, CA), The 2017 APCChE conference (Hong Kong, China) -the bi-annual conference brings together the Asian Pacific community of chemical and process engineers and industrial chemists; The 2017 International Congress in Chemical Engineering (Barcelona, Spain); The 4th Zing Conference in Electrochemistry 2015 (Carvoeiro, Portugal); The XXI Congreso de la Sociedad Iberoamericana de Electroquímica 2014 (La Serena, Chile, keynote); The 65th Annual Meeting of the International Society of Electrochemistry 2012 (Lausanne, Switzerland, keynote); The 63rd Annual Meeting of the

International Society of Electrochemistry 2012 (Prague, Czech Republic); The Gordon Research Conference in Electrochemistry 2008 (California); and others.

1. *Electrochemical Technologies toward Sustainability and Circular Economy (invited),* **Gerardine. G. Botte**, Chemical Engineering Department, University of Florida, November 2022.
2. *Electrochemical Valorization of Waste Activated Sludge to Chemicals (invited),* **Gerardine. G. Botte**, 242nd Electrochemical Society, Atlanta, October 2022
3. *Understanding the Electrochemical Interactions of Coronavirus,* Ashwing Ramanujam and **Gerardine. G. Botte**, 242nd Electrochemical Society, Atlanta, October 2022
4. *Thin-Separator for Low-Melting Point Thermal Battery Electrolytes,* Andrew Baggett, Christian Alvarez-Pugliese, and **Gerardine. G. Botte**, 242nd Electrochemical Society, Atlanta, October 2022
5. *Synthesized Pectin from Food Waste and Application in Electrolyte Gelation for CO_2 Reduction,* Nathan Wilson and **Gerardine. G. Botte**, 242nd Electrochemical Society, Atlanta, October 2022
6. *Electrochemical Technologies toward Sustainability and Circular Economy (invited),* **Gerardine. G. Botte**, Chemical Engineering Department, University of Washington, October 2022.
7. *Electrochemical Technologies toward Sustainability and Circular Economy (invited),* **Gerardine. G. Botte**, Chemical Engineering Department, NYU, September 2022.
8. *Pee to Power: Hollywood and Rolling Stone (invited),* **Gerardine. G. Botte**, Las Mujeres y La Quimica, Caracas, Venezuela, December 2021 (online).
9. *Waste Activated Sludge Valorization for Short-Chain Fatty Acids Production by Integrated Electro-Alkaline Treatment (invited),* Maasoomeh Jafari and Gerardine. G. Botte, American Institute of Chemical Engineering Annual Meeting, Boston, November, 2021.
10. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, University at Buffalo, November 2021.
11. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, XII Simposio Internacional de Investigacion Quimica en la Frontera, Tijuana, November 2021 (online).
12. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, Iowa State University, October 2021.
13. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, Massachusetts Institute of Technology, October 2021.
14. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, Michigan State University, September 2021.
15. *Electrochemical Extraction of Rare Earth Elements (invited),* **Gerardine G. Botte**, the Clearwater Clean Energy Conference, Florida, July 2021.
16. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, Northwestern University, May 2021 (online).
17. *Evaluation of Electrochemically Reduced Graphene Composites As Antibacterial Materials,* Behnaz Jafari, Carla Lacerda, and **Gerardine. G. Botte**, 239th Electrochemical Society, Montreal (digital), March 2021.
18. *Ceramic Felt Separator and Modified Iron (II) Disulfide Cathodes for Lithium Salt Thermal Batteries,* Aliakbar Yazdani, Mohan Sanghadasa, and **Gerardine. G. Botte**, 239th Electrochemical Society, Montreal (digital), March 2021.

19. *Electrochemical Valorization of Waste Activated Sludge for Short-Chai Fatty Acids Production,* Maasoomeh Jafari and Gerardine. G. Botte, 239th *Electrochemical* Society, Montreal (digital), March 2021.
20. *Continuous and Ultra-Fast Sars-CoV-2 Monitoring of Indoor Air,* Ashwin Ramanujan, Ozhan Gecgel, Fei Lu, and Gerardine. G. Botte, 239th *Electrochemical* Society, Montreal (digital), March 2021.
21. *Electrochemical Extraction of Rare Earth Elements from Coal-by Products (invited),* Gerardine. G. Botte, 239th *Electrochemical* Society, Montreal (digital), March 2021.
22. *Electrochemical Technologies for Water Sustainability (invited),* **Gerardine. G. Botte**, American Chemical Society of Puerto Rico (digital), December 2020
23. *Integrated Alkali-electrochemical process for wastewater treatment,* Masi Jafari and **Gerardine. G. Botte**, 236th Electrochemical Society, Honolulu, Hawaii (digital) October 2020.
24. *Integration of Low Melting Point Temperature Electrolyte in Thermal Batteries,* Ali Yazdani and **Gerardine. G. Botte**, 236th Electrochemical Society, Honolulu, Hawaii (digital) October 2020.
25. *Rapid Corona Virus Detection Sensor,* Ashwin Ramanujam and **Gerardine. G. Botte**, 236th Electrochemical Society, Honolulu, Hawaii (digital) October 2020.
26. *Extraccion Electroquimica de Tierras Raras de Cenizas Volatiles de Carbon (invited)*, **Gerardine. G. Botte**, V Workshop de la Red E3TECH/I Workshop Iberomericano a Distancia, E3TECH, European Conference, October 2020.
27. *Sewage Sludge Treatment by a Novel Electrochemical Technique,* Masi Jafari and **Gerardine. G. Botte**, 71th International Society of Electrochemistry, Belgrade, Serbia, September 2020.
28. *Strategies for Sustainable Electrochemical Engineering Education: Online Integration (Invited),* **Gerardine. G. Botte**, 71th International Society of Electrochemistry, Belgrade, Serbia, September 2020.
29. *GreenBox a modular technology for ammonia and nitrate removal,* **Gerardine. G. Botte**, TechConnect Innovation Challenge and Defense, Received Innovation Award, National Harbor, MD, July 2020.
30. *Ultra-fast Covid 19 Diagnostic Sensor,* **Gerardine. G. Botte**, TechConnect Innovation Challenge and Defense, Received Innovation Award, National Harbor, MD, July 2020.
31. *Electrochemical Conversion of Nitrogen Containing Compounds (Invited)* **Gerardine G. Botte**, University of Arkansas, December 2019.
32. *Electrocatalysis for the Simultaneous Removal of Nitrate and Ammonia from Wastewater,* Benjamin Sheets and **Gerardine G. Botte**, AIChE Annual Meeting, Orlando, FL, 2019
33. *Electrochemical Nitrogen Reduction Reaction: Attempts at Improving Efficiency by Control of Water and Potential,* Benjamin Sheets and **Gerardine G. Botte**, AIChE Annual Meeting, Orlando, FL, 2019
34. *Electrochemical Recovery of Rare Earth Elements from Ohio Coal and Coal By-Products,* **Gerardine G. Botte**, Behnaz Jafari, Alamgir Haque, Xiang Lyu, 2019 International Pittsburgh Coal Conference, Pittsburgh, PA, September 2019.
35. *Electrochemical Production of Rare Earth Elements from Coal and By-products,* **Gerardine G. Botte**, Alamgir Haque, Behnaz Jafari, 70th Annual Meeting of the International Society of Electrochemistry, Durban, South Africa, August 2019.
36. *The GreenBox-Ammonia and Nitrate Removal with Energy Cogeneration,* **Gerardine G. Botte***,* Workshop: Wastewater-Energy as a Resource for a Sustainable Future, Durban, South Africa, August 2019 (invited talk)

37. *Electrochemical Microbial Sensor - Rapid, Precise and Portable Pathogenic Detection*, **Gerardine G. Botte**, 2019 TechConnect World Innovation Conference & Expo, Boston, MA, June 2019. (Innovation Award)
38. *The GreenBox - Ammonia and Nitrate Removal with Energy Cogeneration*, **Gerardine G. Botte**, 2019 TechConnect World Innovation Conference & Expo, Boston, MA, June 2019.
39. *Electrochemical Extraction of Rare Earth Metals from Coal and Coal By-Products*, Behnaz Jafari, Alamgir M. Haque, Xiang Lyu, **Gerardine G. Botte**, 44th International Technical Conference on Clean Energy, Clearwater, Florida, June 2019.
40. *Development of a Graphene-Nickel Composite Electrode for Hydroxyl Ion Sensing Applications*, Behnaz Jafari, **Gerardine G. Botte**, 235th ECS Meeting, Dallas, TX, May 2019.
41. *Removal of Nitrate and Ammonia from Wastewater*, Mohiedin Bagheri Hariri, **Gerardine G. Botte**, 235th ECS Meeting, Dallas, TX, May 2019.
42. *Electrochemical Conversion of Ammonia and Nitrogen for Sustainable Food-Energy-Water,* **Gerardine G. Botte**, 2019 AIChE Annual Meeting, Pittsburgh (Invited), PA, October 2018.
43. *Online Sensor Device for Rapid Escherichia coli Detection in Water*, Ashwin Ramanujam, Rebecca Keogh, John Goettge, Madhivanan Muthuvel, Ronan Carroll, **Gerardine G. Botte**, 233th ECS Meeting, Cancun, Mexico, October 2018.
44. *Rapid Electrochemical Detection of Escherichia coli Using a Rotating Disc Electrode*, Ashwin Ramanujam, Bert Neyhouse, Rebecca Keogh, John Goettge, Madhivanan Muthuvel, Ronan Carroll, **Gerardine G. Botte**, 233th ECS Meeting, Cancun, Mexico, October 2018 (Student Poster Award Winner)
45. *Electrochemical Conversion of Ammonia: from wastewater treatment to ammonia synthesis*, **Gerardine G. Botte**, Birla Institute of Technology Pilani, Goa, India, August 2018.
46. *Ammonia as an Energy Carrier,* **Gerardine G. Botte**, Electric Power Research Institute, Electrification 2018 International Conference (Invited), CA, August 2018.
47. *Graphene from Coal Char: Synthesis and Applications,* **Gerardine G. Botte**, XXVII International Materials Research Congress (Invited), Cancun, MX, August 2018.
48. *Coal Electrolysis for the Removal of Mercury, Hydrogen Production, REE, and Other High Value Materials,* **Gerardine G. Botte**, National Energy Technology Laboratory (Invited), WV, July 2018.
49. *Electrochemical Conversion of Nitrogen Containing Compounds,* **Gerardine G. Botte**, Pacific Northwest National Laboratory (Invited), WA, July 2018.
50. *Biomass Electrolysis for Hydrogen Production*, Xiang Lyu, **Gerardine G. Botte**, 43td International Technical Conference on Clean Energy, Clearwater, Florida, June 2018.
51. *The GreenBox: Wastewater Remediation and Energy Generation*, **Gerardine G. Botte**, 2018 TechConnect World Innovation Conference & Expo, Anaheim, California, May 2018.
52. *Advanced Electrolytes for Thermal Batteries*, **Gerardine G. Botte**, 2018 TechConnect World Innovation Conference & Expo, Anaheim, California, May 2018.
53. *Urea Electrolysis as a Medical Devices Platform*, **Gerardine G. Botte**, 2018 TechConnect World Innovation Conference & Expo, Anaheim, California, May 2018 (Innovation Award).

54. *On the Electrolysis of Urea: from Water Remediation to Biomedical Applications,* **Gerardine G. Botte**, Chemical Engineering Department, Columbia University (Invited), New York City, May 2018.
55. *On the Electrolysis of Urea: from Water Remediation to Biomedical Applications,* **Gerardine G. Botte**, Chemical Engineering Department, Louisiana State University (Invited), Baton Rouge, April 2018.
56. *Ionic Conductivity and Thermal Stability of Lithium Salt/KF-HF Electrolytes for Thermal Batteries*, Aiakbar Yazdani, Mohan Sanghadasa, **Gerardine G. Botte**, 232^{sd} ECS Meeting, Seattle, WA, April 2018.
57. *On the Electrolysis of Urea: from Water Remediation to Biomedical Applications,* **Gerardine G. Botte**, Chemical and Biomolecular Engineering Department, Ohio State University (Invited), Columbus, March 2018.
58. *Coal Electrolysis: Hydrogen Production, Advanced Materials and Mercury Removal*, **Gerardine G. Botte**, 10th World Congress of Chemical Engineering (Invited), Barcelona, Spain, October 2017.
59. *Ammonia Electrolysis in a Municipal Wastewater Treatment Plant*, **Gerardine G. Botte**, 232^{sd} ECS Meeting, National Harbor, Maryland, October 2017.
60. *Electrochemical Ammonia Synthesis Via Nitrogen Reduction Under Mild Conditions*, B. Sheets and **Gerardine G. Botte**, 232^{sd} ECS Meeting, National Harbor, Maryland, October 2017.
61. *Thermal Batteries and Other Electrochemical Energy Conversion/Storage Technologies*, **Gerardine G. Botte**, Nasa Glenn Research Center (Invited), Cleveland, Ohio, September 2017.
62. *Electrochemical Conversion of Ammonia: from Wastewater Treatment to Ammonia Synthesis*, **Gerardine G. Botte**, 17th Congress APCChE (Invited), Hong Kong, August 2017.
63. *Strategies for Sustainable Electrochemical Engineering Education*, **Gerardine G. Botte**, 68th Annual Meeting International Society of Electrochemistry (Invited), Providence, Rhode Island, August 2017.
64. *Electrochemical Production of Ammonia in Alkaline Media*, **Gerardine G. Botte** and Ben Sheets 68th Annual Meeting International Society of Electrochemistry (Invited), Providence, Rhode Island, August 2017.
65. *Coal Electrolysis for the Removal of Mercury and Hydrogen Production*, Alamgir Mojibul, Xiang Lyu and **Gerardine G. Botte**, 42nd International Technical Conference on Clean Energy, Clear Water, Florida, June 2017.
66. *Pristine Low-Cost Large-Area Graphene Sheets*, **Gerardine G. Botte**, 2017 TechConnect World Innovation Conference & Expo, National Harbor, Maryland, May 2017.
67. *Electrochemical CO_2 Reduction to High Value Chemicals*, **Gerardine G. Botte**, 2017 TechConnect World Innovation Conference & Expo, National Harbor, Maryland, May 2017.
68. *Modular Ammonia Synthesis*, **Gerardine G. Botte**, 2017 TechConnect World Innovation Conference & Expo, National Harbor, Maryland, May 2017.
69. *Pristine Low-Cost Large-Area Graphene Sheets (C2G)*, **Gerardine G. Botte**, 2017 TechConnect World Innovation Conference & Expo (Innovation Award Winner), National Harbor, Maryland, May 2017.
70. *Integrated Metal Oxide Hybrid Perovskite Photoelectrode for Efficient Photoelectrochemical Water Splitting*, S. Roy and **Gerardine G. Botte**, 231st ECS Meeting (Invited), New Orleans, Louisiana, May 2017.

71. *Electrochemical Reduction of Carbon Dioxide to Hydrocarbons Using Copper Nanocomposite Catalyst*, Madhivanan Muthuvel, Fei Lu, and **Gerardine G. Botte**, 231st ECS Meeting, New Orleans, Louisiana, May 2017.
72. *Understanding the Electrochemically Induced Conversion of Urea to Ammonia for Direct Ammonia SCR Processes*, Fei Lu and **Gerardine G. Botte**, 231st ECS Meeting, New Orleans, Louisiana, May 2017.
73. *Overview of Center for Electrochemical Engineering Research*, **Gerardine G. Botte**, Hexion Seminar (Invited), Houston, Texas, March 2017.
74. *Ammonia and Metals Removal*, **Gerardine G. Botte**, Ovals 13th Annual Conference (Invited), Cincinnati, Ohio, February 2017.
75. *Advanced Wastewater Treatment for Removal of Ammonia and Nitrates Using the Ammonia GreenBox*, **Gerardine G. Botte**, Ovals 13th Annual Conference (Innovation Award Winner), Cincinnati, Ohio, February 2017.
76. *Electrochemical Pathways for Sustainable Manufacturing*, **Gerardine G. Botte**, AIChE National Conference, (Invited) San Francisco, California, November 2016.
77. *Electrochemical Technologies for Energy Conversion, Storage, and Synthesis of Chemicals and Materials*, **Gerardine G. Botte**, ARMDEC (Invited), Huntsville, Alabama, October 2016.
78. *Center Approach to Accelerate Technology Commercialization*, **Gerardine G. Botte**, 230th ECS Meeting, Honolulu, Hawaii, October 2016.
79. *A Novel Approach to Coal Processing - Electrochemical Solutions to Pollution Reduction and Material Synthesis*, Aliakbar Yazdani, Santosh Vijapur, Benjamin Sheets, Dan Wang, Yuxuan Wang, **Gerardine G. Botte**, 230th ECS Meeting, Honolulu, Hawaii, October 2016.
80. *On the Electrolysis of Urea: from Water Remediation to Biomedical Devices*, **Gerardine G. Botte**, Lakehead University Department of Chemistry (Invited), Thunder bay, Canada, September 2016.
81. *Electrochemical Disinfection of Wastewater Using Urine Electrolysis,* **Gerardine G. Botte**, Five Year Technology Portfolio Review, Bill and Melinda Gates Foundation (Invited), Seattle, Washington, July 2016.
82. *Center for Electrochemical Engineering Research (CEER) and Center for Electrochemical Processes and Technologies (CEProTECH)*, **Gerardine G. Botte**, Eastman Seminar (Invited), Tennessee, July 2016.
83. *Electrochemical Reduction of CO_2 to High Value Chemicals*, Fei Lu, Madhivanan Muthuvel, and **Gerardine G. Botte**, 41th International Conference on Coal Utilization, Clearwater, Florida, June 2016.
84. *Selective Reductant Electrowinning for Metal Recovery and Waste Reduction*, **Gerardine G. Botte**, 2016 TechConnect World Innovation Conference & Expo, National Harbor, Maryland, May 2016.
85. *Multi-functional Coal-Derived Graphene Films (C2G)*, **Gerardine G. Botte**, 2016 TechConnect World Innovation Conference & Expo (Innovation Award Winner), National Harbor, Maryland, May 2016.
86. *Investigation of Pt-Based Alloy Catalysts for Direct Ammonia Fuel Cells*, Zhefei Li, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
87. *In Situ Liquid-Cell Transmission Electron Microscopy Investigation of Nickel Electrodeposition*, Yuhuan Wang, Zhefei Li, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
88. *Electrochemical Ammonia Synthesis Under Ambient Conditions Using Alkaline Media*, Ben Sheets, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.

89. *Reversible Lithiation/Delithiation Behavior in Conversion-Type Tin Phosphide/Graphite Composite Anode for Li-Ion Batteries*, Zhefei Li, Y. Ding, C. U. Segre, Y. Wang, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
90. *In Situ EXAFS Study of Tin Phosphide/Graphite Composite Anodes for Lithium-Ion Batteries*, Y. Ding, Zhefei Li, C. U. Segre, Y. Wang, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
91. *Silver Modified MnO_2 As an Electro-Catalyst for Oxygen Reduction Reaction in Alkaline Fuel-Cell and Battery Applications*, S. Velraj, K. Beverage, Z. Li, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
92. *Modeling Transport Phenomena in Ammonia Fuel Cells Using Orthogonal Collocation Method,* Dongmyung Suh, Oludamilola Daramola, **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
93. *Disinfection Promoted by Urine Electrolysis,* **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
94. *(Science for Solving Society's Problems Challenge Grant Winner) Electrochemical Disinfection of Wastewater Using Urea Electrolysis,* M. Muthuvel, B. Neyhouse*,* **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
95. *Theoretical Calculations of Ammonia Oxidation kinetics on Platinum, Iridium and Their Bimetallic Clusters,* Ali Estejab*,* **Gerardine G. Botte**, 229th ECS Meeting, San Diego, California, May 2016.
96. *Coal-Derived Graphene for Coatings Applications, Capabilities of the Center for Electrochemical Engineering Research (CEER) and the I/UCRC: Center for Electrochemical Processes and Technology (CEProTECH*), **Gerardine G. Botte**, American Coatings Conference, Indianapolis, Indiana, April 2016.
97. *Pee to Power: Hollywood and Rolling Stone?* **Gerardine G. Botte**, Distinguished Professor Lecture, Ohio University, Athens, Ohio, February 2016.
98. *Electrochemical Quantification of Vanadium By Novel Electroanalytical Technique*, Moises Israel Salazar-Gastelum, **Gerardine G. Botte**, 228th ECS Meeting, Phoenix, Arizona, October 2015.
99. *Understanding the Electrochemical Induction of Urea to Ammonia on Nickel Based Catalyst in Alkaline Medium*, Fei Lu, **Gerardine G. Botte**, 228th ECS Meeting, Phoenix, Arizona, October 2015.
100. *Demonstration of ammonia Electrolysis in a Municipal Wastewater Treatment Facility*, **Gerardine G. Botte**, 12th Annual Ammonia Fuel Conference, Chicago, Illinois, September 2015.
101. *Electrochemical Manufacturing in the Chemical Industry*, **Gerardine G. Botte**, University of Hamburg, Germany, September 2015 (invited speaker).
102. *Electrochemical Pathways for Sustainable Manufacturing*, **Gerardine G. Botte**, University of Hamburg, Germany, September 2015 (invited speaker).
103. *Production of High Value Graphene from Coal*, **Gerardine G. Botte**, TechConnect World Innovation Conference and Expo, Washington DC, June 2015 (invited speaker).
104. *Electrochemical Reactors*, **Gerardine G. Botte**, 7th European Summer School Electrochemical Engineering, Leeuwarden, The Netherlands June 2015 (invited speaker).
105. *Components of Electrochemical Reactors*, **Gerardine G. Botte**, 7th European Summer School Electrochemical Engineering, Leeuwarden, The Netherlands June 2015 (invited speaker).

106. *Electrochemical Reduction of CO_2 to Chemicals*, Dan Wang, Madhivanan Muthuvel, Fei Lu, and **Gerardine G. Botte**, 40th International Conference on Coal Utilization, Clearwater, Florida, June 2015.
107. *Production of Hydrogen by Electrolysis of Petcoke*, Moises Israel Salazar-Gastelum and **Gerardine G. Botte**, 40th International Conference on Coal Utilization, Clearwater, Florida, June 2015.
108. *Electrolysis of Urea for the Sustainable Production of Hydrogen*, **Gerardine G. Botte**, EAWAG, Zurich, Switzerland, June 2015 (invited speaker).
109. *Electrochemical Synthesis of Ammonia in Alkaline Media*, Natalie Tzap, Madhivanan Muthuvel, **Gerardine G. Botte**, 227th ECS Meeting, Chicago, Illinois, May 2015.
110. *Electrochemical Synthesis of Ammonia Using Molybdenum-Based Catalyst*, Hamed Bateni, **Gerardine G. Botte**, 227th ECS Meeting, Chicago, Illinois, May 2015.
111. *Mesoporous $NiCo_2O_4$ Nanosheets Grown on Stainless Steel Meshes As Binder Free Electrodes for Urea Electrolysis*, Dan Wang, **Gerardine G. Botte**, 227th ECS Meeting, Chicago, Illinois, May 2015.
112. *Optimized Performance of a Scale-up Ammonia Electrolyzer for Combined Wastewater Remediation and Hydrogen Production*, Ali Estejab, **Gerardine G. Botte**, 227th ECS Meeting, Chicago, Illinois, May 2015.
113. *An Investigation of the Growth Mechanism of Coal Derived Graphene Films*, Santosh Vijapur, David Ingram, **Gerardine G. Botte**, 227th ECS Meeting, Chicago, Illinois, May 2015.
114. *Electrolysis of Urea for Sustainable Hydrogen Production*, **Gerardine G. Botte**, 4th Zing Conference in Electrochemistry, Carvoeiro, Portugal, April 2015 (invited speaker).
115. *On the Electrolysis of Urea: from Water Remediation to Biomedical Devices*, **Gerardine G. Botte**, Translational Biomedical Science Research, Ohio University, March 2015 (invited speaker).
116. *Electrolysis of Urea for the Sustainable Production of Hydrogen*, **Gerardine G. Botte**, 249th ACS National Meeting, Denver, Colorado, March 2015 (invited speaker).
117. *NSF I/UCRC Center for Electrochemical Processes and Technology a Model for Open Innovation*, **Gerardine G. Botte**, 226th ECS Meeting, Cancun, Mexico, October 2014 (invited speaker).
118. *Simulation of the Ammonia Electrolysis Process* **Gerardine G. Botte**, 226th ECS Meeting, Cancun, Mexico, October 2014.
119. *Electrolysis of Urea for the Production of Hydrogen*, **Gerardine G. Botte**, XIV International Congress of the Mexican Hydrogen Society, Cancun, Mexico, October 2014 (keynote speaker).
120. *Graphene from Coal Char: Synthesis and Applications*, **Gerardine G. Botte**, ElectrochemOhio, Columbus, Ohio, September 2014 (invited speaker).
121. *Ammonia Electrolysis: Recovery of Energy from Waste*, **Gerardine G. Botte**, The 65th Annual Meeting of the International Society of Electrochemistry, Lausanne, Switzerland, September 2014 (keynote speaker).
122. *Graphene from Coal Char: Synthesis and Applications*, **Gerardine G. Botte**, Physics and Astronomy Fall 2014 Colloquium Ohio University, Athens, Ohio, September 2014 (invited speaker).
123. *Coal electrolysis Integrated Solvent Extraction System for Hydrogen Production*, S. Vijapur and **Gerardine G. Botte**, 39th International Conference on Coal Utilization, Clearwater, Florida, June 2014.

124. *Carbon Coated Fe_3O_4 Nanoparticles as Solid Electrolyte Interface for Improving Graphite Anodes in Lithium Ion Batteries*, B. Moradi Ghandi, and **Gerardine G. Botte**, 225th ECS Meeting, Orlando, Florida, Spring 2014.
125. *ECS Student Achievement Award of the IEEE Division Electrochemical Oxidation of Urea on Nickel Catalyst in Alkaline Medium: Investigation of the Reaction Mechanism*, V. Vedharathinam, and **Gerardine G. Botte**, 225th ECS Meeting, Orlando, Florida, Spring 2014.
126. *Kinetics Analysis of Ammonia Electrolysis*, L. Diaz, and **Gerardine G. Botte**, 225th ECS Meeting, Orlando, Florida, Spring 2014.
127. *Evaluating the Thermodynamics of Electrochemical Ammonia Oxidation for Hydrogen Production*, D. A. Daramola, and **Gerardine G. Botte**, 225th ECS Meeting, Orlando, Florida, Spring 2014.
128. *Powder X-ray Diffraction as a Tool for In Situ Characterization of Electrochemical Systems*, D. Wang, and **Gerardine G. Botte**, 225th ECS Meeting, Orlando, Florida, Spring 2014.
129. *Ammonia Electrolysis from Fundamentals to Applications*, **Gerardine G. Botte**, XXI Congreso de la Sociedad Iberoamericana de Electroquímica, La Serena, Chile, April 2014 (keynote speaker).
130. *Overview of Technologies at the Center for Electrochemical Engineering*, **Gerardine G. Botte**, Second Seminar of Hydrogen Production, Instituto Tecnologico de Quintana Roo, Quintana Roo, Mexico, December 2013 (invited speaker).
131. *Ammonia Electrolysis: from Fundamentals to Applications*, **Gerardine G. Botte**, IX International Symposium of Chemistry on the Border, Instituto Tecnologico de Tijuana, Tijuana, Mexico, November 2013 (invited speaker).
132. *Ammonia Electrolysis: Basic Principles*, **Gerardine G. Botte**, Inorganic Chemistry Seminar Series, Michigan State University, Lance, Michigan, October 2013 (invited speaker).
133. *Kinetics Studies for Ammonia Electro-oxidation on Pt Deposited Electrodes*, Luis Diaz, **Gerardine G. Botte**, AIChE National Conference, San Francisco, California, October 2013.
134. *Mathematical Model of Parallel Plate Alkaline Water Electrolyzers*, Ali Estejab, Daramola Damilola and **Gerardine G. Botte**, AIChE National Conference, San Francisco, California, October 2013.
135. *Effect of Bubbles Coverage in Gas Evolving Rotating Disk Electrodes*, Luis A. Diaz, Madhivanan Muthuvel, and **Gerardine G. Botte**, 224th ECS Meeting, San Francisco, California, October 2013.
136. *Deammonification of Wastewater through Ammonia Electrolysis*, Ali Estejab, Luis A. Diaz, and **Gerardine G. Botte**, 224th ECS Meeting, San Francisco, California, October 2013.
137. *Ammonia Synthesis from Urea using an Electrochemical Approach*, Fei Lu, and **Gerardine G. Botte**, 224th ECS Meeting, San Francisco, California, October 2013.
138. *Investigation of Potential Oscillations during the Electro-oxidation of Urea on Ni Catalyst in Alkaline Medium*, Vedasri Vedharathinam, and **Gerardine G. Botte**, 224th ECS Meeting, San Francisco, California, October 2013.
139. *Coal Derived Graphene- Pt nanocomposites for Hydrogen Production via Ammonia Electro-oxidation*, Santosh H. Vijapur, Dan Wang, and **Gerardine G. Botte**, 224th ECS Meeting, San Francisco, California, October 2013.
140. *Ammonia and Urea Electrolysis the Beginning of the GreenBox*, **Gerardine G. Botte**, Ohio University Emeritus Association, Athens, Ohio, October 2013 (invited speaker).

141. *Strategies in Teaching Electrochemistry for Energy Storage*, **Gerardine G. Botte**, The 64th Annual Meeting of the International Society of Electrochemistry, Queretaro, Mexico, September 2013 (invited speaker).
142. *Electrolyte Enhanced Electrochemical Gasification of Coal*, Xiaoyong Xia and **Gerardine G. Botte**, 38th International Conference on Coal Utilization, Clearwater, Florida, June 2013.
143. *Alternative Fuels and Challenges in the Roadmap for Their Adoption*, **Gerardine G. Botte**, Annual Conference, Ohio Society of Professional Engineers, Athens, Ohio June 2013 (invited speaker).
144. *Nickel Based Catalysts for Urea Electro-oxidation*, Wei Yan, Dan Wang, and **Gerardine G. Botte**, 223th ECS Meeting, Montreal, Canada, May 2013.
145. *Electrochemical Technologies for the Production of Hydrogen from Alternative Sources*, **Gerardine G. Botte**, Chemical Engineering Department Seminar Series, University of South Carolina, Columbia, South Carolina, May 2013 (invited speaker).
146. *Ammonia and Urea Electrolysis: The Beginning of the GreenBox*, **Gerardine G. Botte**, National Academy of Inventors, 2nd Annual Conference, Tampa, Florida, February 2013 (invited speaker).
147. *Electrochemical Technologies for the Production of Hydrogen and Advanced Materials from Alternative Sources*, **Gerardine G. Botte**, University of Texas at Arlington, Chemistry Department, Spring Seminar Series Arlington, Texas, February 2013 (invited speaker).
148. *Electrochemical Technologies for the Production of Hydrogen*, **Gerardine G. Botte**, 4th Convention of Chemical Engineering Students, University of Puerto Rico, Mayaguez, February 2013 (invited speaker).
149. *Ammonia and Urea Electrolysis: The Beginning of the GreenBox*, **Gerardine G. Botte**, National Academy of Inventors, 2nd Annual Conference, Tampa, Florida, February 2013 (invited speaker).
150. *Electrochemical Technologies for the Production of Hydrogen and Advanced Materials from Alternative Sources*, **Gerardine G. Botte**, University of Texas at Arlington, Chemistry Department, Spring Seminar Series Arlington, Texas, February 2013 (invited speaker).
151. *Electrochemical Reduced Graphene Oxide-Nickel Nanocomposites for Hydrogen Production From Urea Electrolysis*, Dan Wang, Wei Yan, Santosh H. Vijapur, and **Gerardine G. Botte**, AIChE National Conference, Pittsburgh, Pennsylvania, October 2012.
152. *On the Adsorption of Thiol Molecules On a Nickel Catalyst: A Theoretical Approach*, Damilola A. Daramola, Brian L. Hassler, and **Gerardine G. Botte**, AIChE National Conference, Pittsburgh, Pennsylvania, October 2012.
153. *Investigation of Ammonia Oxidation On the Platinum Surface for Hydrogen Generation*, Damilola A. Daramola and **Gerardine G. Botte**, AIChE National Conference, Pittsburgh, Pennsylvania, October 2012.
154. *Application of Novel Spectroscopy Methods in Electrochemical Studies*, Aria Kahyarian, Damilola A. Daramola and **Gerardine G. Botte**, AIChE National Conference, Pittsburgh, Pennsylvania, October 2012.
155. *Effects of Crystal Structure On Nickel Catalysts: A Experimental Approach*, Brian L. Hassler, Damilola A. Daramola and **Gerardine G. Botte**, AIChE National Conference, Pittsburgh, Pennsylvania, October 2012.
156. *Computer Simulation of Water and Ammonia Electrolysis*, Ali Estejab, Damilola A. Daramolaand **Gerardine G. Botte**, AIChE National Conference, Pittsburgh, Pennsylvania, October 2012.

157. *Mathematical Modeling of Ammonia Electro-Oxidation in a Rotating Disk Electrode (RDE) System*, Luis A. Diaz, Madhivanan Muthuvel, and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
158. *The Effect of Surface Modification on the Properties of a Nickel Catalyst: A Theoretical Study*, Damilola Daramola, Brian Hassler, and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
159. *Effect of Nickel Surface Structure on Urea Electrolysis: An Experimental Study*, Brian Hassler, Damilola Daramola, Alex Miller, and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
160. *Electrochemical Decomposition of Urea with Ni-Based Catalysts*, Wei Yan, Dan Wang, and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
161. *Mechanistic Studies during Electro-Oxidation of Urea on Ni-Co Catalyst in Alkaline Medium*, Vedasri Vedharathinam and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
162. *Theoretical Characterization of Ammonia Oxidation Intermediates and Products on Platinum Clusters*, Damilola Daramola and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
163. *Graphene Nanosheets as Negative Electrode for Lithium Ion Battery*, Arthur Guildea, Santosh Vijapur, and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
164. *Nanostructured Nickel Hydroxides for Urea Electrolysis*, Dan Wang, Wei Yan, Santosh Vijapur, and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
165. *Low Temperature Synthesis of Nanoscaled Carbon Thin Films by Chemical Vapor Deposition Using Solid Carbon Source*, Santosh Vijapur, Dan Wang and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
166. *A Semi-Empirical Model of Ammonia Electrolysis in Comparison to Water Electrolysis*, Ali Estejab, Damilola Daramola and **Gerardine G. Botte**, 222sd ECS Meeting, Honolulu, Hawaii, October 2012.
167. *Carbon Nanostructures from Coal over Metallic Foils: Evaluation of the Electrochemical Properties*, Ana Maria Valenzuela-Muñiz and **Gerardine G. Botte**, The 63rd Annual Meeting of the International Society of Electrochemistry, Prague, Czech Republic, August 2012.
168. *Electrochemical Technologies for the Production of Hydrogen from Alternative Sources*, **Gerardine G. Botte**, The 63rd Annual Meeting of the International Society of Electrochemistry, Prague, Czech Republic, August 2012 (invited speaker).
169. *Recovery of Ni and Ni-Co Alloy from Ni-MH Battery Waste and its Application in Urea Electrolysis*, Vedasri Vedharathinam and **Gerardine G. Botte**, The 63rd Annual Meeting of the International Society of Electrochemistry, Prague, Czech Republic, August 2012.
170. *Analysis of Ammonia Electro-oxidation Mechanism*, Luis Diaz and **Gerardine G. Botte**, 221th ECS Meeting, Seattle, Washington, May 2012.
171. *Bimetallic Platinum –Iron Nano-electrocatalyst for Coal Electro-oxidation for the Production of Hydrogen*, Ping Yu and **Gerardine G. Botte**, 221th ECS Meeting, Seattle, Washington, May 2012.
172. *Denitrification of Wastewater through Ammonia Electrolysis*, **Gerardine G. Botte**, Seventh Transdisciplinary Research Conference, University of Puerto Rico, Rio Piedras, May 2012 (invited speaker).

173. *On the Electrolysis of Urea: Applications, Catalysts, and Mechanisms of Reaction*, **Gerardine G. Botte**, Medtronic Seminar, Minneapolis, January 2012 (invited speaker).
174. *New Business Venture Creating Forum,* **Gerardine G. Botte**, Ohio University, San Jose, California, January 2012 (invited panelist).
175. *OHIO's Center for Electrochemical Engineering Research: Global Leadership in Technologies for Clean Water, Energy, and Air*, ***Gerardine G. Botte***. **Webinar** through the National Council of Entrepreneurial Tech Transfer. October 2011. CEER at Ohio University was the pioneered group to start this series of webinars. There were 86 participants world wide in the webinar.
176. *CEER Fuel Cell Advanced Energy*, Gerardine G. Botte, Ohio Fuel Cell Coalition, Athens, Ohio, November 2011 (invited speaker).
177. *A Computational Study on the Effect of Water Molecules on Uncatalyzed Ammonia Oxidation*, Lingchong Mai, Damilola Daramola, and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
178. *On the Theoretical Characterization of Nickel (II) Hydroxide for Hydrogen Production from Urea*, Damilola Daramola, and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
179. *Nickel/Cobalt Bimetallic Hydroxide Catalysts for Urea Electro-oxidation*, Wei Yan, Dan Wang, and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
180. *Electrochemical Urea Sensor by Rhodium Plated Ni-Based Electrode*, Alex Miller, Brian Hassler, Arthur Guildea, and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
181. *Investigating the Reaction Mechanism for Electrochemical Oxidation of Urea on Ni-Hydroxide Modified Electrodes in Alkaline Medium*, V. Vedharathinam and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
182. *Computational Study of Ammonia Oxidation on Platinum Clusters*, D. A. Daramola and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
183. *Feasibility Studies on Electrolyte Recycling During Coal Electrolysis to Produce Hydrogen*, S. Vijapur, A. Valenzuela, and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
184. *Synthesis of Carbon Nanotubes Using Coal Extracts*, A. Valenzuela , S. Vijapur, and **Gerardine G. Botte**, 220th ECS Meeting, Boston, Massachusetts, October 2011.
185. *Coal Electrolysis for the Production of Hydrogen and Liquid Fuels*, Ana Valenzuela, Michael E. Prudich, and **Gerardine G. Botte**, First Coal Technology Fund Symposium, Laramie, Wyoming, August 2011.
186. *Advanced Energy Conversion from Coal Through Electrolysis: Factors Influencing the Production of Hydrogen*, Ana Valenzuela and **Gerardine G. Botte**, 36th International Conference on Coal Utilization, Clearwater, Florida, June 2011.
187. *Integrating Coal Electrolysis in an Advanced Coal Power Plant*, Santosh Vijapur, Ana Valenzuela, and **Gerardine G. Botte**, 36th International Conference on Coal Utilization, Clearwater, Florida, June 2011.
188. *Denitrification of Wastewater through Ammonia Electrolysis*, **Gerardine G. Botte** and Luis Diaz, 219th ECS Meeting, Montreal, Canada, May 2011.
189. *Electrodeposition of Rhodium on Nickel Electrodes Used as Urea Oxidation Electrocatalysts*, Alex T. Miller and **Gerardine G. Botte**, 219th ECS Meeting, Montreal, Canada, May 2011.
190. *Evaluation of Catalyst Support Materials for Ammonia Electrolysis*, Madhivanan Muthuvel and **Gerardine G. Botte**, 219th ECS Meeting, Montreal, Canada, May 2011.

191. *Liquid Fuels Extracted from Coal after the Electrolysis to Produce Hydrogen*, Ana Valenzuela and **Gerardine G. Botte**, 219th ECS Meeting, Montreal, Canada, May 2011.
192. *In-situ Raman spectroscopic Study of the Effect of OH- Adsorption on Ammonia Electro-oxidation,* Dan Wang and **Gerardine G. Botte**, University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011.
193. *Hydrogen Production Projects at CEER*, Madhivanan Muthuvel, Ana Valenzuela, John Goetgge, and **Gerardine G. Botte,** Ohio Fuel Cell Coalition, Canton, Ohio, April 2011. Displayed booth with demonstrations of several projects.
194. *Comparison of Gel vs. Liquid Electrolyte for Urea Oxidation,* Geetha Krishnan and **Gerardine G. Botte**, University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011.
195. *Advanced Energy Projects at CEER*, Luis Diaz, Vedasri Vedharathinam, and **Gerardine G. Botte,** University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011. Displayed booth with demonstrations of several projects.
196. *Integrating Coal Electrolysis in an Advanced Coal Power Plant,* Santosh Vijapur, Ana Valenzuela, and **Gerardine G. Botte**, University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011.
197. *Urea Voltammetric Detection on Ni-based RDE,* Fei Lu and **Gerardine G. Botte**, University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011.
198. *Study of the Electrolyte in Coal Electrolysis for Hydrogen Production,* Xiaoyong Xia and **Gerardine G. Botte**, University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011.
199. *Electrocatalytic Oxidation of Urea on Nickel Hydroxide Modified Electrode,* Vedasri Vedharathinam and **Gerardine G. Botte**, University Clean Energy Alliance of Ohio, Columbus, Ohio, April 2011.
200. *Denitrification of Wastewater through Ammonia Electrolysis*, **Gerardine G. Botte**, Southern Methodist University, Chemistry Department, Fall Seminar Series Dallas, Texas, September 2011 (invited speaker).
201. *Analysis of Electrochemical Systems through Modeling*, **Gerardine G. Botte**, Shanghai Jiao Tong University, Shanghai, China, February 2011 (invited scholar).
202. *Challenges in the Road Map for Adoption of Fuel Cell and Electric Vehicles*, **Gerardine G. Botte**, Shanghai Jiao Tong University, Shanghai, China, February 2011 (invited scholar).
203. *Ammonia and Urea Electrolysis: A Vision for a Cleaner Future*, **Gerardine G. Botte**, World Technology Awards, New York City, December 2010 (invited speaker, award nominee).
204. *Ammonia Electrolysis: Energy Recovery from Swine Farms*, **Gerardine G. Botte**, North Carolina State University, Chemical and Biomolecular Engineering Department, Fall Seminar Series Raleigh, North Carolina, December 2010 (invited speaker).
205. *Feasibility Studies for Use of Ammonia Electrolysis as a Source of Hydrogen for Distributed Power Production for Residential Applications*, R. Palaniappan, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
206. *Electrochemical Remediation of Swine Wastewater*, L. A. Diaz, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
207. *Key Factors of Coal Electrolysis for Hydrogen Production*, X. Xia, A. M Valenzuela Muñiz, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.

208. *Electric Field Effects on the Adsorption of NH_3 on Platinum for Electrochemical Oxidation*, D. A. Daramola, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
209. *PEM Fuel Cell Evaluation Using Pt/MWCNT*, Y. Verde-Gomez (Instituto Tecnológico de Cancún), A. Valenzuela-Muñiz (Ohio University), M. Miki-Yoshida (Centro de Investigación en Materiales Avanzados), B. Escobar-Morales (Instituto Tecnológico de Cancún), and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
210. *Identifying and Adapting a Solid Polymer Electrolyte for Ammonia Electrolysis*, R. Palaniappan, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
211. *Electro-Oxidation of Urea on NiOOH Electrode*, V. Vedharathinam, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
212. *In Situ Raman Spectroscopic Study of Ammonia Electro-Oxidation in Alkaline Media*, D. Wang, J. Goettge, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
213. *Ammonia Oxidation on Platinum Anodes: A DFT Study of Two Mechanisms*, D. A. Daramola, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
214. *PtNi/CNT and PtRuNi/CNT as Catalysts for PEM Fuel Cells*, Y. Verde-Gomez (Instituto Tecnológico de Cancún), A. Valenzuela-Muñiz (Ohio University), M. Miki-Yoshida (Centro de Investigación en Materiales Avanzados), B. Escobar-Morales (Instituto Tecnológico de Cancún), and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
215. *Determination of Organic Compounds in Coal Extracts Using Cyclic Voltammetry*, A. M. Valenzuela Muñiz, and **Gerardine G. Botte**, 218th ECS Meeting, Las Vegas, Nevada, October 2010.
216. *Electrolysis of Wyoming Coal for the Production of Hydrogen*, Ana Valenzuela, Michael Prudich and **Gerardine G. Botte**, International Advanced Coal Technologies, Laramie, Wyoming, June 2010.
217. *Electrolysis of Coal for the Production of Hydrogen*, **Gerardine G. Botte**, NSF Workshop Energy and the Environment, University of New Hampshire, Massachusetts, May 2010 (invited speaker).
218. *Characterization of Coal after Electrolysis for the Production of Hydrogen*, Ana Valenzuela, Xiaoyong Xian, Santosh Vijapur, and **Gerardine G. Botte**, 35th International Conference on Coal Utilization, Clearwater, Florida, June 2010.
219. *Electrolysis of Bituminous and Sub-bituminous Coal for the Production of Hydrogen*, Ana Valenzuela, Xiaoyong Xian, Santosh Vijapur, and **Gerardine G. Botte**, 35th International Conference on Coal Utilization, Clearwater, Florida, June 2010.
220. *Electrolysis of Ammonia: Recovery of Energy from Effluents*, **Gerardine G. Botte**, ATINER, Athens, Greece, May 2010.
221. *Theoretical Investigation of Ammonia Oxidation on Platinum 111*, Damilola Daramola, Allison Deguvics, and **Gerardine G. Botte**, 217th ECS Meeting, Vancouver, Canada, April 2010.
222. *Analysis of Coal Extracts Using Electrochemical Techniques*, Ana Maria Valenzuela and **Gerardine G. Botte**, 217th ECS Meeting, Vancouver, Canada, April 2010.
223. *Alternative for Green Fuels in Airplanes and Airports*, **Gerardine G. Botte**, AITEM, New Orleans, Louisiana, March 2010.

224. *Removal of Ammonia from Farm Lagoons*, **Gerardine G. Botte**, IFO Meeting, Athens, Ohio, March 2010.
225. *Electrolysis of Coal for the Production of Hydrogen*, **Gerardine G. Botte**, University of Louisville, Kentucky, February 2010 (invited speaker).
226. *Electrolysis of Coal for the Production of Hydrogen*, **Gerardine G. Botte**, Centro de Investigacion de Materiales Avanzados (CIMAV), Chihuahua, Mexico, December 2009 (invited speaker).
227. *The Potential Role of Ammonia Electrolysis in the Treatment of Ammonium-Containing Wastewaters*, **Gerardine G. Botte** and G. Bowden, 6th Annual Ammonia Conference, Kansas City, Missouri, October 2009.
228. *Sustainable Hydrogen Production Via Urea Electrolysis*, R. L. King, and **Gerardine G. Botte**, 216th ECS Meeting, Vienna, Austria, October 2009.
229. *Ni Effect on the Electrochemical Activity of PtRu/MWCNT Catalysts for DMFC*, A. M. Valenzuela Muniz, Y. Verde, G. Alonso-Nunes, M. Miki-Yoshida, and **Gerardine G. Botte**, 216th ECS Meeting, Vienna, Austria, October 2009.
230. *Theoretical Raman Spectra of Monoclinic Zirconia for SOFC Studies*, **Gerardine G. Botte,** Damilola Daramola, and Madhivanan Muthuvel, 60th Annual Meeting of the International Society of Electrochemistry, Beijing, China, August 2009.
231. *Electrochemical Properties of Pt/MWCNT Using CO Stripping*, A. M. Valenzuela Muniz, Y. Verde, G. Alonso-Nunes, M. Miki-Yoshida, and **Gerardine G. Botte**, 60th Annual Meeting of the International Society of Electrochemistry, Beijing, China, August 2009.
232. *Theoretical Study of the Kinetics of Ammonia Oxidation on Platinum Anodes*, D. A. Daramola, A Dugovics, and **Gerardine G. Botte**, 215th ECS Meeting, San Francisco, California, May 2009.
233. *Theoretical Raman Spectra of Monoclinic Zirconia for SOFC studies*, D. A. Daramola, Madhivanan Muthuvel, and **Gerardine G. Botte**, 215th ECS Meeting, San Francisco, California, May 2009.
234. *Optimization of Urea Electrolysis*, R. L. King, and **Gerardine G. Botte**, 215th ECS Meeting, San Francisco, California, May 2009.
235. *Use of Experimental Techniques Combined with Ab Initio Calculations to Study Urea Electro Oxidation Reaction for Hydrogen Production*, D. Singh, D. A. Daramola, and **Gerardine G. Botte**, 215th ECS Meeting, San Francisco, California, May 2009.
236. *Processes for Wastewater Remediation: Ammonia Electrolysis and Urea Electrolysis*, **Gerardine G. Botte,** Clean Technology Conference and Expo, Houston, Texas, May 2009.
237. *Titanium as Substrate for Well-Aligned MWCNT Forest*, Y. Verde, A. Valenzuela, and **Gerardine G. Botte,** NanoScience Conference and Expo, Houston, Texas, May 2009.
238. *Effect of Ultrasonic Irradiation on the Electrolysis of Coal*, Chaminda Perera, Xiaxong Xin, and **Gerardine G. Botte** 34th International Conference on Coal Utilization, Clearwater, Florida, May 2009.
239. *Hydrogen Production Technologies at the EERL*, Chaminda Perera, Madhivanan Muthuvel, Rebecca King**,** and **Gerardine G. Botte,** National Hydrogen Association Conference and Expo, Columbia, South Carolina, May 2009. Displayed booth with demonstrations.
240. *Electrolysis of Ammonia as a Remediation Process*, **Gerardine G. Botte** Cruise Ship Wastewater Treatment Technologies Workshop, Juneau, Alaska, February 2009. (Invited by the Department of Environmental Conservation of the State of Alaska).

241. *Carbon Nanotubes Growth over Titanium as Catalyst Support for Hydrogen Production*, A. M. Valenzuela Muniz, Y. Verde, G. Alonso-Nunes, M. Miki-Yoshida, and **Gerardine G. Botte**, 214th ECS Meeting, Honolulu, Hawaii, October 2008.
242. *Electrolysis of Urea Using a Solid Polymer Electrolyte*, R. L. King and **Gerardine G. Botte**, 214th ECS Meeting, Honolulu, Hawaii, October 2008.
243. *Electrodeposition of Platinum-Iridium Alloys and its Application as Electrocatalyst in Ammonia Oxidation*, T. Jiang and **Gerardine G. Botte**, 214th ECS Meeting, Honolulu, Hawaii, October 2008.
244. *Ab Initio Calculations Combined with Experimental Techniques for Analyzing Urea Electrooxidation*, D. Singh and **Gerardine G. Botte**, 214th ECS Meeting, Honolulu, Hawaii, October 2008.
245. *Alkaline Urea Electrolysis and Possible Applications*, B. K. Boggs and **Gerardine G. Botte**, 214th ECS Meeting, Honolulu, Hawaii, October 2008.
246. *Ammonia Electrolysis*, **Gerardine G. Botte**, Gordon Research Conference of Electrochemistry, Ventura, California, January 2008 (invited speaker).
247. *Hydrogen Production Technologies at the EERL*, **Gerardine G. Botte**, 4th Hydrogen International Conference of Japan, Tokyo, Japan, February 2008. Displayed booth with demonstrations.
248. *On Board Hydrogen Production: An Application of Ammonia Electrolysis*, Bryan Boggs and **Gerardine G. Botte**, 213th ECS Meeting, Phoenix, Arizona, May 2008.
249. *Electrolysis of Coal at Intermediate Temperatures*, Xin Jin and **Gerardine G. Botte**, 33th International Conference on Coal Utilization, Clearwater, Florida, May 2009.
250. *Optimizing the Electro-oxidation Rate of Ammonia*, Bryan Boggs and **Gerardine G. Botte**, 213th ECS Meeting, Phoenix, Arizona, May 2008.
251. *Optimizing the Reduction of Water in Alkaline Media for Ammonia Electrolysis*, Ramasamy Palaniappan and **Gerardine G. Botte**, 213th ECS Meeting, Phoenix, Arizona, May 2008.
252. *Electrochemical Coal Gasification with Novel Electrodes*, **Gerardine G. Botte**, and Xin Jin, Edison Materials and Technology Center-Projects Review, Springfield, Ohio, February 2007.
253. *Ammonia Electrolyzer Performance and Applications*, **Gerardine G. Botte**, Mahesh Biradar, and Ben Schafer, National Hydrogen Association-Annual Hydrogen Conference, San Antonio, Texas, March 2007.
254. *Hydrogen production from coal electrolysis*, **Gerardine G. Botte** and Xin Jin, National Hydrogen Association-Annual Hydrogen Conference, San Antonio, Texas, March 2007.
255. *Theoretical Study of Solid Oxide Fuel Cell anodes in the presence of H_2S*, Damilola Daramola, Madhivanan Muthuvel and **Gerardine G. Botte**, 211th ECS Meeting, Chicago, Illinois, May 2007.
256. *In Situ Ammonia Electrolysis Application: Shoe-Sized-Ammonia-Powered Automobile*, Bryan K. Boggs, Amy M. Weber and **Gerardine G. Botte**, 211th ECS Meeting, Chicago, Illinois, May 2007 (Poster. All of us were present).
257. *Design and Scale up of Ammonia Electrolytic Cell and its Integration with a 5W Proton Exchange Membrane (PEM) Fuel Cell*, Mahesh Biradar, Madhivanan Muthuvel, Bryan K. Boggs, and **Gerardine G. Botte**, 211th ECS Meeting, Chicago, Illinois, May 2007.
258. *Optimization of the Cathode for the Production of Hydrogen through Ammonia Electrolysis*, Ramasamy Palaniappan and **Gerardine G. Botte**, 211th ECS Meeting, Chicago, Illinois, May 2007.

259. *Mechanisms for the Electro-Oxidation of Coal*, Xin Jin and **Gerardine G. Botte**, 211th ECS Meeting, Chicago, Illinois, May 2007.
260. *Study of Mechanisms for the Electro-Oxidation of Coal*, Xin Jin and **Gerardine G. Botte**, 212th ECS Meeting, Washington, DC, October 2007.
261. *Study of Mechanisms for the Electro-Oxidation of Coal*, Xin Jin and **Gerardine G. Botte**, 212th ECS Meeting, Washington, DC, October 2007.
262. *Computational and Experimental Analysis of Solid Oxide Fuel Cell Anodes in the Presence of H_2S*, Damilola Daramola, Madhivanan Muthuvel and **Gerardine G. Botte**, 212th ECS Meeting, Washington, DC, October 2007.
263. *Electrolysis of Coal at Intermediate Temperatures*, **Gerardine G. Botte** and Xin Jin, 32th International Technical Conference on Coal Utilization & Fuel Systems, Clearwater, Florida, June 2007.
264. *Electrolysis of Ammonia Effluents – An Energy Recovery Process*, **Gerardine G. Botte**, Ammonia - Sustainable, Emission Free Fuel, San Francisco, California, October 2007.
265. *Ammonia Electrolyzer: Applications and Its Integration with PEM Fuel Cells* **Gerardine G. Botte** and Mahesh Biradar, Fuel Cells in a Changing World, London, UK, September 2007.
266. *Ammonia Electrolysis a Solution to Hydrogen Production, Storage, and Transportation,* **Gerardine G. Botte**, Case Western Research-Chemical Engineering Department Spring Seminar Series, Cleveland, OH, May 2007.
267. *Hydrogen Production Technologies at the Electrochemical Engineering Research Laboratory,* Mahesh Biradar, Madhivanan Muthuvel, Oludamilola Daramola, Xin Jin, and **Gerardine G. Bott**e, Ohio Fuel Cell Coalition, Columbus, Ohio, June 2007. Comments: This was a stand were we had a mobile lab, that is, we showed the technologies in real life. All of us were at the stand explaining different technologies.
268. *Electro-oxidation of Ammonia Using Carbon Paper Electrodes*, Madhivanan Muthuvel and **Gerardine G. Botte**, 210th ECS Meeting, Cancun, Mexico, October 2006.
269. *Electrolysis of Coal at Intermediate Temperatures*, Xin Jin and **Gerardine G. Botte**, 210th ECS Meeting, Cancun, Mexico, October 2006.
270. *In situ Hydrogen Production from the Electrolysis of Ammonia*, **Gerardine G. Botte** and Luciano Benedetti, Fuel Cells Science and Technology, Turin, Italy, September 2006.
271. *Feasibility of Electrolyzing Ammonia Effluents for the Production of Hydrogen*, **Gerardine G. Botte** and Egilda P. Bonnin, Fuel Cells Science and Technology, Turin, Italy, September 2006. **Nominated for Best Poster under the category of Fuels by the William Grove Academy**.
272. *Production of Hydrogen from Ammonia Electrolysis: Economic Analysis*, **Gerardine G. Botte**, Fuel Cells Science and Technology, Turin, Italy, September 2006.
273. *Hydrogen Production from Coal Electrolysis*, **Gerardine G. Botte** and Xin Jin, Fuel Cells Science and Technology, Turin, Italy, September 2006.
274. *Recovery of Ammonia Energy from Municipal and Agricultural Wastewater: Ammonia Electrolysis*, **Gerardine G. Botte** and John Holbrook, Ammonia the Key to US Energy Independence, Denver, Colorado, October 2006.
275. *Assessment of Coal and Graphite Electrolysis for the Production of Hydrogen*, **Gerardine G. Botte** and Nilesh Sathe, 31th International Technical Conference on Coal Utilization & Fuel Systems, Clearwater, Florida, May 2006.

276. *Theoretical Investigations of Solid Oxide Fuel Cell Anode Materials in the Presence of H_2S*, **Gerardine G. Botte** and Andres I. Marquez, 31th International Technical Conference on Coal Utilization & Fuel Systems, Clearwater, Florida, May 2006.
277. *Electrochemical Engineering Elective Course using Active Learning*, **Gerardine G. Botte**, 209th ECS Meeting, Denver, Colorado, May 2006.
278. *Adherence of Carbon Nanotubes on Carbon Fibers: Optimization of Binder Additives (PTFE and Graphite Conductive Adhesive) for Electrode Preparations*, Bryan Boggs and **Gerardine G. Botte**, 209th ECS Meeting, Denver, Colorado, May 2006.
279. *A New Method to Measure Fe2+ and Fe3+ Concentration in Solution Simultaneously*, Xin Jin and **Gerardine G. Botte**, 209th ECS Meeting, Denver, Colorado, May 2006.
280. *Hydrogen Production Technologies at the Electrochemical Engineering Research Laboratory,* Purusha Bonnin, Mahesh Biradar, Brian Boggs, Xin Jin, and **Gerardine G. Botte**, Ohio Fuel Cell Coalition, Cleveland, Ohio, June 2006. Comments: This was a stand were we had a mobile lab, that is, we showed the technologies in real life. All of us were at the stand explaining different technologies.
281. *Electrolysis of Ammonia Effluents: A Remediation Process with Hydrogen Cogeneration*, **Gerardine G. Botte** and Purusha Bonnin, 208th ECS Meeting, Los Angeles, California, October 2005.
282. *Electrolysis of Coal and Graphite on Novel Carbon Fiber Electrodes*, **Gerardine G. Botte** and Nilesh Sathe, 208th ECS Meeting, Los Angeles, California, October 2005.
283. *Analysis of Electrokinetic Data of Coal Slurry Oxidation by Parameter Estimation and Modeling and Discrimination Techniques*, **Gerardine G. Botte** and Prashanth Patil, 208th ECS Meeting, Los Angeles, California, October 2005.
284. *Electrolysis of Ammonia an In-Situ Hydrogen Production Process*, **Gerardine G. Botte** and Luciano Benedetti, AIChE National Meeting, Cincinnati, Ohio, November 2005.
285. *Electrolysis of Ammonia Effluents as a Remediation Process*, **Gerardine G. Botte** and Purusha Bonnin, AIChE National Meeting, Cincinnati, Ohio, November 2005.
286. *Electrolysis of Coal for the Production of Hydrogen*, **Gerardine G. Botte**, Prashanth Patil, Yolanda De Abreu, Nilesh Sathe, and Michael E Prudich, AIChE National Meeting, Cincinnati, Ohio, November 2005.
287. *Electrode Kinetics and Modeling of the Electro-oxidation of Coal Slurries*, **Gerardine G. Botte** and Prashanth Patil, AIChE National Meeting, Cincinnati, Ohio, November 2005.
288. *Electrocatalysis of the Oxidation of Ammonia by Platinum and Rhodium on a Raney Nickel Substrate*, Mathew Cooper and **Gerardine G. Botte**, AIChE National Meeting, Cincinnati, Ohio, November 2005.
289. *Theoretical Investigations of Solid Oxide Fuel Cells Anode Materials*, Andres Marquez and **Gerardine G. Botte**, AIChE National Meeting, Cincinnati, Ohio, November 2005.
290. *Feasibility of Electrolyzing Ammonia Effluents*, Elizabeth Cellar, Purusha Bonnin, and **Gerardine G. Botte**, AIChE National Meeting, Cincinnati, Ohio, November 2005.
291. *Hydrogen Production from the Electrooxidation of Ammonia Catalyzed by Carbon Fiber and Carbon Nanofiber Based Platinum* Russell Farquhar and **Gerardine G. Botte**, AIChE National Meeting, Cincinnati, Ohio, November 2005.

292. *Impedance Analysis of a Coal Electrolytic Cell for the Production of Hydrogen,* Yolanda De Abreu, Prashanth Patil, and **Gerardine G. Botte**, Department of Energy Coal Meeting, Pittsburgh, Pennsylvania, October 2005.
293. *Electrolysis of Coal on Carbon Fiber Electrodes,* Prashanth Patil, Yolanda De Abreu, and **Gerardine G. Botte**, Ohio Fuel Cell Coalition, Cleveland, Ohio, June 2005.
294. *Electrolysis of Ammonia: A Clean Hydrogen Production Process,* Juan Gonzalez and **Gerardine G. Botte**, Ohio Fuel Cell Coalition, Cleveland, Ohio, June 2005.
295. *Feasibility of Electrolyzing Ammonia Effluents for the Production of Hydrogen,* Purusha Bonnin, Elizabeth Cellar, and **Gerardine G. Botte**, Ohio Fuel Cell Coalition, Cleveland, Ohio, June 2005.
296. *Theoretical Investigations of Solid Oxide Fuel Cell Anode Materials in the Presence of H_2S,* Andres Marquez, Yolanda De Abreu, and **Gerardine G. Botte**, Ohio Fuel Cell Coalition, Cleveland, Ohio, June 2005.
297. *Hydrogen Production Technologies at the Electrochemical Engineering Research Laboratory,* Luciano Benedetti, Prashanth Patil, Yolanda De Abreu, and **Gerardine G. Botte**, Ohio Fuel Cell Coalition, Cleveland, Ohio, June 2005. Comments: This was a stand were we had a mobile lab, that is, we showed the technologies in real life. All of us were at the stand explaining different technologies.
298. *Challenges in Fuel Cell Technology: Ammonia Electrolysis a Solution to Hydrogen Storage,* **Gerardine G. Botte**, 1 Jornadas y Ciclo de Conferencias XXX Aniversario, Escuela de Ingenieria Quimica, Valencia, Venezuela, October 2005. Comments: Dr. Botte was the keynote speaker.
299. *Investigation of Electrode Kinetics for the Electro-oxidation of Coal Slurries*, Prashanth Patil and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
300. *Assessment of Coal and Graphite Electrolysis*, Nilesh Sathe and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
301. *Theoretical Investigation of Anode Materials for Solid Oxide Fuel Cells*, Andres Marquez, Yolanda de Abreu, and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
302. *Theoretical Investigation of the Electro-oxidation of Ammonia*, **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
303. *Analysis of Electro-kinetics of Ammonia Oxidation in Alkaline Media by Mathematical Modeling*, **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
304. *Electro-oxidation of Ammonia on Carbon Fibers*, Juan J. Gonzalez and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
305. *Ammonia Electrolysis to Power a Hydrogen Fuel Cell: Case Study of an Integrated System*, **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
306. *Feasibility of Electrolyzing Ammonia Effluents for the Production of Hydrogen*, Purusha Bonnin, Elizabeth Cellar, and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
307. *Experimental and Theoretical Investigation of the Electrolysis of Ethanol for Fuel Cell Applications*, Yolanda de Abreu, Andres Marquez, and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
308. *Electrocatalysis of the Oxidation of Ammonia by Raney Nickel and Platinum*, Matt Cooper and **Gerardine G. Botte**, 206th ECS Meeting, Honolulu, Hawaii, October 2004.
309. *Evaluation of Different Electrode Materials for the Electro-oxidation of Coal Slurries for the Production of Hydrogen*, Prashanth Patil, Yolanda de Abreu, Michael Prudich, and **Gerardine G. Botte**, 205th ECS Meeting, San Antonio, Texas, May 2004.

310. *Polymetallic Electrocatalysts on Titanium Substrate for the Oxidation of Dissolved Ammonia*, Frederic Vitse, Juan J. Gonzalez, and **Gerardine G. Botte**, 205th ECS Meeting, San Antonio, Texas, May 2004.
311. *Electrolysis of Coal for the Production of Hydrogen for Fuel Cell Applications*, **Gerardine G. Botte**, First Ohio Air Quality and Coal Research Symposium, Athens, Ohio, December 2004.
312. *Electro-oxidation of Ammonia in Different Ni Alloy Electrodes,* Matt Cooper, Frederic Vitse, and **Gerardine G. Botte**. 204th ECS Meeting, Orlando, Florida, October 2003.
313. *Experimental and Theoretical Investigation of the Electrolysis of Ethanol for Fuel Cell Applications,* Andres I. Marquez, Jenna Heilmann, and **Gerardine G. Botte**. 204th ECS Meeting, Orlando, Florida, October 2003.
314. *Theoretical Investigation of H_2S Corrosion of Mild Steel,* Andres I. Marquez, Wei Sun, and **Gerardine G. Botte**. 203rd ECS Meeting, Paris, France, April 2003.
315. *MRSST a New Method to Evaluate Thermal Stability of Electrolytes for Lithium Ion Batteries*, **Gerardine G. Botte** and Timothy T. Bauer, 11th International Meeting on Lithium Batteries, Monterey, California, June 2002.
316. *Thermal Stability of $LiPF_6$ EC:EMC Electrolyte for Lithium Ion Batteries*, **Gerardine G. Botte**, Ralph E. White, and Zhengming Zhang, 10th International Meeting of Lithium Batteries, Como, Italy May 2000.
317. *Thermal Stability of $LiPF_6$ EC:EMC Electrolyte for Lithium Ion Batteries*, **Gerardine G. Botte**, Ralph E. White, and Zhengming Zhang, 4th Chicago Battery Workshop, Chicago, Illinois April 2000.
318. *Modeling the Lithium Intercalation Process in a Porous Electrode*, **Gerardine G. Botte** and Ralph E. White, 4th Chicago Battery Workshop, Chicago, Illinois April 2000.
319. *Influence of Some Design Variables on the Thermal Behavior of a Lithium-Ion Cell*, **Gerardine G. Botte**, Bradley A. Johnson, and Ralph E. White, 194th ECS meeting, Boston, Massachusetts, October 1998.

Research and Sponsor Programs (summary)

Led and executed research projects totalizing over $18.9 million, currently executing over $33.8 million, and $5.2 million in pending from a wide variety of federal, state, private sponsors, and non-for-profit organizations, including the:

- National Science Foundation (including a prestigious NSF ERC, and I/UCR Center)
- Department of Energy
- State of Wyoming
- Ohio Department of Development
- Ohio Water Authority
- National Institute of Standards and Technology
- U.S. Department of Defense
- Construction Engineer Research Laboratory (CERL)
- U.S. Army Research Office
- The U.S. Army Aviation and Missile Research, Development, and Engineering Center (AMRDEC)
- DARPA
- NASA
- Nonprofit organizations (Electrochemical Society/Gates Foundation)
- Multiple corporate sponsors (Solvay, Inergy, Eastman, Hexion, Alstom, Tenneco, IHI, Owens Corning, Innova, SABIC, AREC, EviroTech, among others)

Current Funding: **Executing $33,869,365**

1. Title: NSF Engineering Research Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER) Botte is PI.
   Source of Funds: National Science Foundation
   Total Award: $32,500,000 ($26,000,000 NSF and $6,500,000 TTU, GT, CWRU, MIT, FAMU). First 5 years
   Award Period: 09/01/2022 to 08/31/2027
   Collaborators: Y. Roman (MIT), M. Hatzell (Georgia Tech), R. French (Case Western Reserve University), O. Mbuya (FAMU)

2. Title: Understanding and Controlling Electrochemical Routes for Upcycling of Polyolefins
   Source of Funds: US Department of Energy Office of Science
   Total Award: $750,000
   Award Period: 09/01/2021 – 8/31/2023
   Collaborators: J. Ruiz (Pacific Northwest National Laboratory, $75,000)

3. Title: Electrochemical Detection of SARS-CoV-2
   Source of Funds: EviroTECH LLC
   Total Award: $249,333
   Award Period: 06/01/2021 – 5/30/2023
   Collaborators: N/A

4. Title: Ultra-Fast SARS-CoV-2 Sensor
   Source of Funds: National Science Foundation (I-Corps)
   Total Award: $50,000
   Award Period: 01/01/2021 – 01/30/2023
   Collaborators: N/A

5. Title: Biomass Based Polymer Electrolytes for Electrolyzers
   Source of Funds: National Aeronautics and Space Administration
   Total Award: $320,000
   Award Period: 09/01/2020-08/31/2024
   Collaborators: Nathan Wilson

Pending Funding: **$5,522,331**

6. Title: Revalorization of Coal and Byproducts to Hydrogen and Rare Earth Metals Recycling Technologies.
   Source of Funds: American Resources Corporation
   Total Award: $522,331
   Award Period: 02/01/2023 to 01/31/2024
   Collaborators: N/A

7. Title: Phase 1: Electrochemical Conversion of Waste Streams for On-Site Fuel Generation. Botte is PI.

Source of Funds: U.S. Army Engineer Research &Development Center, Construction Engineering Research Laboratory (CERL)
Total Award: $5,000,000 (3,500,000 TTU, $1,500,000 CERL). First 5 years
Award Period: 02/01/2023 to 01/31/2025
Collaborators: A. Petri (CERL), K. Guy (CERL)

Past Funding: **Executed $18,953,268**

1. Title: Ultra-Fast SARS-CoV-2 Sensor for Indoor Air Monitoring
Source of Funds: DARPA
Total Award: $500,000
Award Period: 02/01/2021 - 11/30/2021
Collaborators: N/A

2. Title: Electrochemical Production of REE via Electrolysis of Coal and Byproducts (supplement)
Source of Funds: American Resources Corporation (industry)
Total Award: $140,228
Award Period: 05/01/2021 – 4/31/2022
Collaborators: N/A

3. Title: Electrochemical Production of REE via Electrolysis of Coal and Byproducts
Source of Funds: American Resources Corporation (industry)
Total Award: $225,000
Award Period: 03/01/2021 – 4/31/2022
Collaborators: N/A

4. Title: Maximizing Bio-Renewable Energy from Wet Wastes (M-BREWW)- The Ammonia GreenBox
Source of Funds: US Department of Energy, Subcontract through University of Illinois, Maximizing Bio-Renewable Energy from Wet Wastes (M-BREWW)
Total Award: $299,000 (this is Botte's portion only, total project is ~$2million)
Award Period: 05/01/2019 – 4/31/2022.
Collaborators: University of Illinois, the US Army Corp of Engineers

5. Title: Planning Grant: Engineering Research Center for In-Situ Control of the Nitrogen Cycle (In-SINC)
Source of Funds: National Science Foundation
Total Award: $99,985
Award Period: 09/01/2018-08/31/20
Collaborators: D. Kuneckis (Co-PI, Ohio University), R. Benner (Co-PI, University of South Carolina), R. French (Co-PI Case Western Reserve University), M. Hatzell (Co-PI, Georgia Institute of Technology)

6. Title: Roadmap for the Electrification of Organic Transformations
Source of Funds: National Science Foundation and DOE Science
Total Award: $119,500 ($99,500 (NSF) + $20,000 (DOE Science))
Award Period: 09/01/2019-08/31/2020
Collaborators: JP Tessonnier (PI), Song Lin (Co-PI), G. G. Botte (Co-PI)

7. Title: Hydrogen Production via Lignite Electrolysis
Source of Funds: IHI Corporation, Subcontract through Ohio University
Total Award: $18,498
Award Period: 01/01/2019 – 5/31/2020.
Collaborators: -

8. Title: Electrochemical Extraction of Rare Earth Metals from Ohio Coal and Coal By-products
Source of Funds: Ohio Development Services Agency
Total Award: $374,969 ($249,969 ODSA and $125,000 OHIO)
Award Period: 07/01/2018-06/30/19
Collaborators: -

9. Title: Advanced Wastewater Treatment for Removal of Ammonia and Nitrates using the Ammonia GreenBox
Source of Funds: Ohio Water Authority (OWA)
Total Award: $400,000 ($200,000 OWA and $200,000 Ohio University)
Award Period: 01/01/2018 – 6/30/2019.
Collaborators: Athens Wastewater Treatment Plant

10. Title: I/UCRC for Center for Electrochemical Processes and Technology (CEProTECH)
Source of Support: National Science Foundation and 6 companies
Total Award: $820,125 ($531,375 NSF and $288,750 Ohio University) plus 300,000 per year from companies
Award Period: 03/15/2014 – 04/31/2018. Continued active as an Industry/University Consortium until 7/31/2019

Note: This was an industry consortium using the National Science Foundation I/UCRC program, NSF program finished, and Consortium continued with funds from Industrial Members. Dr. Botte was the Founder and Director of the Consortium. http://ceprotech.com (~$150,000 per year). Consortium ceased operations when Dr. Botte moved to Texas Tech University in the fall of 2019.

11. Title: Hydrogen Production and Biosolids via Municipal Sewage Sludge Electrolysis
Source of Funds: Ohio Water Authority (OWA)
Total Award: $400,000 ($200,000 OWA and $200,000 Ohio University)
Award Period: 01/01/2019 – 6/30/2019.
Collaborators: Athens Wastewater Treatment Plant

12. Title: Electrochemical Sensors as a Platform for the RTT
Source of Funds: Bill and Melinda Gates Foundation
Total Award: $220,325
Award Period: 12/1/2016-10/31/2018
Collaborators: R. Carrol

13. Title: Ohio Coal Conversion to High Value Graphene: Pilot Scale Up
Source of Support: Ohio Department of Development
Total Award: $1,670,586 ($835,293 State of Ohio and $835,293 Ohio University)
Award Period: 11/01/2014 – 7/31/2017
Collaborators: -

14. Title: Hybrid Electrochemical-MFC Waste Processing: Functional blocks for low energy disinfection and denitrification of human waste streams
Total Award: $90,000
Award Period: 12/1/2016-05/30/2018
Collaborators: -

15. Title: Feasibility of Lean Caustic Production via Electrolysis of Untreated Seawater: Phase 1 Paper Study
Total Award: $6,000
Award Period: 10/9/2017-11/13/2017
Collaborators: -

16. Title: Evaluation of a Single Ammonia GreenBox for Wastewater Treatment of a Biological Masonry Process
Source of Support: Biomason Inc. (Industry)
Total Award: $10,500
Award Period: 6/01/2017 – 6/15/2017
Collaborators: -

17. Title: Ammonia Electrolysis Flow Cells
Source of Support: US Army Corp. of Engineers
Total Award: $61,659
Award Period: 5/01/2017 – 2/15/2018
Collaborators: -

18. Title: Feasibility of Electrochemical Reduction of Graphene Oxide on Glass Substrates
Source of Support: Owens Corning
Total Award: $15,000
Award Period: 2017
Collaborators: -

19. Title: NIST AMTECH: Electrochemical Pathway for Sustainable Manufacturing (EPSuM)
Source of Funds: National Institute of Standards & Technology
Total Award: $378,928
Award Period: 06/01/2014 – 5/30/2017.
Collaborators: Polymer Ohio
Note: This grant is to establish a consortium and develop a technology roadmap to support, sustain, and enhance U.S. manufacturing capacity in the nation's chemical industry and allied sectors through innovative processes that utilize electrochemical science and technology to address major technical barriers (http://www.nist.gov/amo/70nanb14h052.cfm)

20. Title: Advanced Fuel Cell System: POwerPack Proof of Concept (Phase I)
Source of Funds: Plastic Omnium (Private)
Total Award: $723,015
Award Period: 06/15/2015 – 06/24/2016.
Collaborators: -

21. Title: Disinfection Promoted by Urine Electrolysis
Source of Funds: Electrochemical Society/Gates Foundation
Total Award: $50,000
Award Period: 07/01/2015 – 07/30/2016.
Collaborators: -

22. Title: Feasibility of Electrochemical Production of High Value Chemicals from Hydrocarbon/Carbon Dioxide
Source of Support: Alstom Power Inc. (Industry)
Total Award: $50,000
Award Period: 1/01/2015 – 10/31/2015
Collaborators: -

23. Title: Graphene Production from Coal
Source of Support: Ohio Department of Development
Total Award: $375,656 ($249,991 State of Ohio and $125,666 Ohio University)
Award Period: 09/01/2013 – 10/31/2014
Collaborators: -

24. Title: Major Research Instrumentation: MRI: Acquisition of Transmission Electron Microscope for Advanced Materials Relating to Energy Storage, Alternative Energy, Remediation, and Superconductors
Source of Funds: National Science Foundation
Total Award: $1,670,474 (distributed as: $1,169,325 NSF, $250,569 State of Ohio, and $250,569 Ohio University)
Award Period: Sep 2011-Aug 2015.
Collaborators: Dr. Botte is the PI, and the following faculty are listed as Co-PIs: K.B. Lee, S. Hla, S. Kaya, G. Van Patten

25. Title: Simulation and Analysis of Novel Anaerobic Wastewater Treatment System for Energy Generation at Contingency Operation Locations
Source of Funds: Department of Defense, Construction Engineering Research Laboratory
Total Award: $224,376
Award Period: Jan 2012-June 2015.
Collaborators: -

26. Title: 5 Watt Ammonia Fuel Cell Demonstration
Source of Support: Inergy Automotive (industry)
Total Award: $25,000
Award Period: 07/01/2014 – 08/31/2014
Collaborators: -

27. Title: Planning Grant: I/UCRC for Center for Electrochemical Processes and Technology (CEProTECH)
Source of Funds: National Science Foundation (Planning grant submitted, sixteen companies provided letters of interest)
Total Award: $15,956
Award Period: Mar 2013-Feb 2014.

Collaborators: Venkat Subramanian, Washington University in St Louis
Special note: This grant was successful and lead to the NSF I/UCRC Center CEProTECH (http://ceprotech.com)

28. Title: Distributed Power from Wastewater (Phase I)
Source of Funds: Department of Defense, Construction Engineering Research Laboratory
Total Award: $2,662,602 ($2,061,050 DoD and $601,552 Ohio University)
Award Period: Sep 2009-September 2012.
Collaborators: -

29. Title: Distributed Power from Wastewater (Phase II)
Source of Funds: Department of Defense, Construction Engineering Research Laboratory
Total Award: $2,101,580 ($1,850,000 DOD and $211,080 Ohio University)
Award Period: Oct 2010-Sep 2013.
Collaborators: -

30. Title: Coal Electrolysis for the Production of Hydrogen and Liquid Fuels
Source of Funds: State of Wyoming
Total Award: $398,000
Award Period: Jan 2009-June 2011.
Collaborators: Michael Prudich (Co-PI)

31. Title: A Facility for the Development and Commercialization of an Ammonia Based Fuel Integrated Power Systems (ABIPS)
Source of Funds: Ohio Department of Development
Total Award: $1,571,207 ($972,921 Ohio Department of Development, $180,578 Ohio University, and 417,708 American Hydrogen Corporation)
Award Period: Apr 2008-Sep 2011.
Collaborators: -

32. Title: Ammonia Electrolysis
Source of Funds: American Hydrogen Corporation
Total Award: $600,000
Award Period: Sep 2007-Aug 2009.
Collaborators: -

33. Title: 5W Ammonia Electrolytic Cell Prototype
Source of Funds: Hydra Fuel Cell Corporation
Total Award: $50,000
Award Period: Nov 2006-Jan 2009.
Collaborators: -

34. Title: Feasibility of Developing Self-Sustainable Ammonia Power Houses
Source of Funds: National Science Foundation
Total Award: $272,995
Award Period: Sep 2005-Aug 2009.
Collaborators: Daniel Castro and Scott Miller (Co-PIs)

Remarks: This is a very competitive grant (PATH initiative of the NSF). Total proposals submitted >120. Only 10 proposals were selected for an award.

35. Title: Feasibility of AEC Technology on the Removal of Ammonia from Ammonium Acrylate
Source of Funds: Rohm and Haas
Total Award: $96,000
Award Period: May 2008-Mar 2009.
Collaborators: -

36. Title: Combined Theoretical-Experimental Investigation and Design of H_2S Tolerant Anode
Source of Funds: Department of Energy
Total Award: $139,872
Award Period: Oct 2005-Sep 2008.
Collaborators: Andres Marquez (Co-PI)
Remarks: This is a very competitive grant (University Coal Research Program of the USDOE). Total proposals submitted >106. Only 20 proposals were selected for an award.

37. Title: Low Cost Creation and Separation of Syngas for use in Distributed Combined Heat, Power and Hydrogen systems
Source of Funds: Department of Energy
Total Award: $1,200,000 ($200,000 for the Solid Oxide Fuel Cell research that is being performed in Dr. Botte's lab, Electrochemical Engineering Research Laboratory)
Award Period: Oct 2005-Sep 2007.
Collaborators: Dave Bayless (PI). Botte (Co-PI)
Remarks: $200,000 is the budget for Dr. Botte's research group.

38. Title: Fuel Cell Laboratory Experiment
Source of Funds: Stark State College/National Science Foundation
Total Award: $35,233
Award Period: Jun 2004-Jun 2007.
Collaborators: M. Prudich, D. Bayless, A. Foley (Co-PIs)

39. Title: Electrochemical Coal Gasification with Novel Electrodes
Source of Funds: Edison Materials Technology Center
Total Award: $35,000
Award Period: Oct 2005-Sep 2006.
Collaborators: -

40. Title: Electrolysis of Ohio Coal for the Production of Hydrogen for Fuel Cell Applications.
Source of Funds: Ohio Coal Development Office
Total Award: $79,995
Award Period: Sep 2003-Aug 2004.
Collaborators: M. Prudich (Co-PI)

41. Title: Electrolysis of Ohio Coal for the Production of Hydrogen for Fuel Cell Applications.
Source of Funds: Ohio Coal Development Office

Total Award: $79,996
Award Period: Oct 2004-Sep 2005.
Collaborators: M. Prudich (Co-PI)

42. Title: Testing System for Fuel Cell Design and Electrokinetics Analyses
Source of Funds: Department of Defense
Total Award: $128,798
Award Period: May 2004-Sep 2005.
Collaborators: -

43. Title: Kinetics Data for Li-Ion Batteries using DSC and ARC.
Source of Funds: Solvay
Total Award: $17,194
Award Period: Sep 2001-Nov 2001.
Collaborators: -

Service Activity (summary)
Participated in several University, College, and Department committees such as:

- Member of TTU Women Full Professor Network, Executive Committee
- Served as Chair of the ECE Department Chair Search Committee (Texas Tech University, 2020)
- Ohio University's first Vice President for Diversity and Inclusion Search Committee. University level
- Ohio University's President Search Committee. University level.
- Margaret Boyd Scholars Program. University level.
- Chair Special Committee of Faculty Senate for Tenure and Promotion (April-May 2018). University level.
- Tenure and Promotion Committee Chemical and Biomolecular Engineering Department at Ohio University (since 2006 to present). Department level.
- Graduate Committee Chemical and Biomolecular Engineering Department at Ohio University (since 2003 to present). Department level.
- Ohio University's Provost Search Committee. University level.
- Technology Transfer Director Search Committee. University level.
- Peer review committee chemical engineering department (responsible for providing recommendations regarding salaries). Department level.
- Multiple faculty searches. Department, College, and University level.
- Energy and the Environment Steering Committee. College level.
- Chair Academic Honor council. College level.

Special Skills: Languages fluent in Spanish and English.

Sessions Chaired at National Meetings and International Meetings
Chaired and co-chaired thirty-seven international meetings; most recent ones include:

1. Co-Chair "Tutorial on Industrial Electrochemistry: Process Intensification, in the 239th Meeting of the Electrochemical Society, Montreal (virtual), 2021
2. Co-Chair "Multiscale Modeling, Simulation and Design-From Conventional Methods to the Latest in Data Science" in the 232^{sd} Meeting of the Electrochemical Society, Seattle, Washington, April 2018.

3. Co-Chair "Electrochemical Engineering" in the 10th World Congress of Chemical Engineering, Barcelona, Spain, October 2017.
4. Co-Chair "Energy Water Nexus" in the 232sd Meeting of the Electrochemical Society, National Harbor, Maryland, October 2017.
5. Organizing Committee, The 68th Annual Meeting of the International Society of Electrochemistry, Providence, Rhode Island, September 2017.
6. Chair "Symposium 12: Electrochemical Technology for Solving 21st Century Challenges", in the 68th Annual Meeting of the International Society of Electrochemistry, Providence, Rhode Island, September 2017.

Past and Current Graduate Students, Post-docs, and Young Professionals
Mentored 17 post-doctoral research associates, 9 young professionals (research engineers) and international scholars (international exchanged graduate students and faculty fellows). Graduated 12 PhD students and 13 MS students. Currently mentoring nine PhD students and one master student

Undergraduate Research Associates
Mentored 37 undergraduate students in research projects.

Synergistic Activities
1. Course development: Taught 13 different courses, all of them using the "*Learn-by-doing"* approach. New concepts are introduced using examples or experiments, emphasizing the theory behind the concepts at the same time (EXCEED model):

- Design of Engineering Experiments (sophomore level, University of Minnesota-Duluth)
- Chemical Engineering Analysis (senior-graduate level, University of Minnesota-Duluth)
- Chemical Engineering Design I (senior level, University of Minnesota-Duluth)
- Chemical Engineering Design II (senior-graduate level, University of Minnesota-Duluth)
- Engineering Research and Fundamentals (graduate level, Ohio University): this course focuses on scientific writing, basic statistics, and writing proposals.
- Analysis of Electrochemical Systems (senior-graduate level course, Ohio University)
- Advance Chemical Engineering Mathematics (graduate level course, Ohio University)
- Chemical Engineering Calculations (junior level, Ohio University)
- Problem Solving in Chemical Engineering (freshman level, Ohio University). This course focuses on computer programming for chemical engineers. Responsible for restructuring this course. The improved course covers computer programming for chemical engineers going from developing flowchart diagrams to developing successfully documented computer codes. New concepts are introduced using examples or experiments, emphasizing the theory behind it at the same time (EXCEED model).
- Unit Operations Lab (senior level, Ohio University). Responsible for the development of the fuel cell experiments.
- Unit Operations Lab (senior level, Ohio University. Developed a new section of the course that focuses on writing successful technical reports.
- Margaret Boyd Scholars freshman and senior seminar (undergraduate level, Ohio University). The First-Year Seminar for Margaret Boyd Scholars is designed to introduce students to the variety of disciplines and approaches to women's scholarship. The Capstone Seminar for Margaret Boyd Scholars is designed to expose students to the professional achievements of women scholars in a variety of disciplines and approaches within the university and in the wider world.

2. Innovations in teaching: Nominated multiple times by the students for Ohio University's Russ College of Engineering and Technology Russ Teaching Award. Other teaching innovations include

organizing the following competitions among chemical engineering students at Ohio University, and at the University of Minnesota-Duluth:

- Chem-e-car competition. At Ohio University and the University of Minnesota-Duluth, the students of Chemical Engineering Design I were required to design and build a chem-e-car. The cars competed internally using the same rules posted by the AIChE Chem-e-car competition. Students prepared posters of their models and designs, then presented results to the Department of Chemical and Biomolecular Engineering. At the University of Minnesota-Duluth, students also presented to the whole university community. Ohio University students earned third place in the regional competition and has participated in the National competition five times. These were new competitions for these universities, originated by Dr. Botte.
- Mathematical modeling competition for students in the Chemical Engineering Analysis class (at University of Minnesota-Duluth only).

3. Contributions to the science of learning: Offers seminars and demonstrations to different local organizations and schools, such as Hocking College, teachers' associations, and the Athens Girl Scouts. Initiated an outreach program in conjunction with the Industrial Electrolysis and Electrochemical Engineering Division of the Electrochemical Society (ECS), the first activity of which took place in Cancun, Mexico, in October 2006, and has since been held internationally a total of 16 times. The program teaches youth about electrochemical energy conversion devices in order to foster their interest in electrochemistry and electrochemical engineering.

4. Advisory board: Served on the advisory board for the development of a new curriculum in Fuel Cell Technology at Hocking College and at Stark State College. Worked closely with the Ohio Department of Education to integrate fuel cell technology into K-12 programs. Served as a board member of the Ohio Fuel Cell Coalition, and as a member of the Network Collaboration Committee of the Council for Chemical Research. Member of the steering committee of ELECTROCHEMOHIO, whose purpose is to facilitate collaboration among electrochemistry groups in the State of Ohio that are affiliated with the Electrochemical Society. Member of the organizing committee for the Annual Meeting of the International Society of Electrochemistry (ISE), which took place in Providence, Rhode Island, during the fall of 2017. Serves in the board of advisors for New AGE a company that is commercializing Dr. Botte's technology for the electrolysis of coal.

5. Board of Directors: Serves in the Board of Directors of EviroTECH LLC (2020 to present), American Resources Corporation (2020 to present), Novusterra (2020 to present). Served in the Scientific Meeting Committee of the International Society of Electrochemistry (2019-to 2020); served on the board of advisors for E3 Clean Technologies Inc. and the Electrochemical Society Board of Directors from Spring 2012 to Spring 2014.