



Gerardine G. Botte, Ph.D.
***Professor and Whitacre Endowed Chair
in Sustainable Energy, Chemical
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<https://www.casfer.us>
<https://www.ceti-lab.com>
<https://www.depts.ttu.edu/isce/>

Texas Tech University, Lubbock TX

Visionary Leader in Electrochemical Science, Technology, and Academia

Dr. Gerardine "Gerri" G. Botte is a preeminent visionary in electrochemical science and technology who has transformed the field through groundbreaking innovations addressing critical challenges in energy, water, and food sustainability. As Professor and Whitacre Endowed Chair in Sustainable Energy at Texas Tech University (TTU), she bridges fundamental scientific discovery with technological innovation and commercial impact.

As Founding Director of the NSF Engineering Research Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER), Dr. Botte leads a landmark \$51 million initiative connecting five major academic institutions (TTU, Georgia Tech, MIT, Case Western Reserve, and Florida A&M) to revolutionize fertilizer production and food security. She also directs TTU's Institute for Sustainability and Circular Economy, creating interdisciplinary platforms for addressing complex sustainability challenges.

Dr. Botte's research has pioneered transformative applications of electrochemical engineering in three key areas: (1) sustainable resource recovery, converting waste materials into valuable resources; (2) clean energy systems, advancing hydrogen production and battery development; and (3) environmental and health protection, creating solutions for water treatment and rapid diagnostics for pathogens including COVID-19, HIV, and PFAS detection. Her exceptional productivity is evidenced by 108 peer-reviewed articles, 64 granted patents, 41 pending patents, and over 9,000 citations, placing her consistently among the top 2% of global researchers in her field. She is ranked within the top 0.05% of scholars worldwide according to the 2024 ScholarGPS rankings and recognized as the #3 lifetime researcher globally in urea

research, specifically for groundbreaking work in urea electrolysis within the field of Chemical Engineering.

Her transformative academic leadership as Whitacre Department Chair in Chemical Engineering at TTU catalyzed a 40% increase in research expenditures while implementing innovative curriculum changes. Previously, she founded and directed the Center for Electrochemical Engineering Research (CEER) at Ohio University, transforming it into a nationally recognized center, and established the Consortium for Electrochemical Processes and Technology (CEProTECH), creating a novel industry-university cooperative model.

Internationally recognized, Dr. Botte served as President of the Electrochemical Society (2023-2024), Chair of the Electrochemical Process Engineering Division for the International Society of Electrochemistry (2019-2021) and continues as Editor-in-Chief of the Journal of Applied Electrochemistry (since 2008). Her exceptional contributions have earned her membership in the National Academy of Science of Venezuela (2023), designation as Fellow of the Electrochemical Society (2014), and selection as a Charter Fellow of the National Academy of Inventors (2012).

As an accomplished entrepreneur, Dr. Botte has founded multiple companies, successfully translating scientific discoveries into commercial technologies that address challenges in wastewater treatment, environmental monitoring, and diagnostic systems. Her educational vision emphasizes a three-pronged approach: hands-on learning, comprehensive mentorship, and informal science programs. She has mentored 19 post-doctoral researchers, 34 graduate students, and 47 undergraduate researchers, with many assuming leadership positions in academia and industry.

Dr. Botte received her Ph.D. (2000) and M.E. (1998) in Chemical Engineering from the University of South Carolina after gaining valuable industrial experience at Petroquímica de Venezuela. With 27 years of experience in electrochemical process development and over \$58 million in secured research funding, Dr. Botte exemplifies visionary leadership that transcends traditional boundaries between fundamental science, engineering innovation, and practical applications addressing critical global challenges.

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