

FRIDAY, April 24, 2026 - 12:00 Noon  
MC H313

## Design and Electrochemical Study of Nanomaterials for Clean Energy and Sensing Applications



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With rapidly mounting environmental concerns, coupled with the accelerated depletion of fossil fuels, there is a significant demand for the development of advanced technologies for the sustainable energy production and environmental remediation. Nanostructured materials with high surface areas have garnered significant interests due to their unique properties and impressive applications spanning electrocatalysis, photocatalysis, energy conversion and storage, sensing, and wastewater treatment. Recently, the Chen research team has designed and investigated a variety of functional nanomaterials. In this talk, the synthesis and surface characterization of advanced palladium, gold, copper, and graphene-based nanomaterials are presented. The electrochemical properties of these nanomaterials as well as their promising applications in hydrogen production and storage, CO<sub>2</sub> reduction, and electrochemical sensing are highlighted. The critical roles of nanostructured surfaces in the development of advanced electrochemical technologies for clean energy and sensing applications will be discussed.

## Biography

Dr. Aicheng Chen is a Professor of Chemistry, Director of the Electrochemical Technology Centre at the University of Guelph, and a Tier 1 Canada Research Chair in Electrochemistry and Nanoscience. He is a Fellow of the Chemical Institute of Canada, the Royal Society of Canada, the Royal Society of Chemistry (UK), and the International Society of Electrochemistry (ISE). Dr. Chen's research interests encompass Electrochemistry, Green Chemistry, and Nanoscience. He has published 318 peer-reviewed journal articles and nine book chapters. Professor Chen has held several leadership roles, including Chair of the Electrochemical Society (ECS) Canadian Section (2009–2010), Canada Regional Representative for the ISE (2010–2012), Chair of the 15th ISE Topical Meeting (2014), and Chair of the International Symposium on Electrochemistry and Surface Science, a satellite meeting of the 75th ISE Annual Meeting (2024). He has received several awards, including the Ontario Premier's Research Excellence Award (2003), the Japan Society for the Promotion of Science (JSPS) Invitation Fellowship (2006), the Fred Beamish Award of the Canadian Society for Chemistry (CSC) (2009), the Lash Miller Award of the ECS Canada Section (2009), the Keith Laidler Award of the CSC (2012), the Canadian Catalysis Lectureship Award from the Catalysis Division of the Chemical Institute of Canada (2013), the W.A.E. McBryde Medal of the CSC (2016), the R.C. Jacobsen Award of the ECS Canada Section (2020), and the Ricardo Aroca Award of the CSC (2023).