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RECHARGEABLE BATTERIES OF THE FUTURE: HOW FAR CAN WE PUSH THE THERMODYNAMIC AND KINETIC LIMITS?

Abstract: This title refers to the two fundamental constraints currently faced by battery technology: the issue of capacity, which gives rise to so-called *range anxiety* (the fear of running out of power), and the issue of *charging rate* (the frustration of long recharging times). In this talk, we will present an overview of modern batteries from a broad, multidisciplinary perspective, and examine these two limitations while highlighting potential solutions. We will also discuss some of the work being carried out in our laboratories, emphasizing the importance of being embedded in a strong technological and scientific ecosystem.

About the speaker: Ezequiel Leiva is currently an Emeritus Professor at the National University of Córdoba (UNC) and a Superior Researcher of CONICET. He obtained a PhD. Degree in Physical Chemistry at the UNC, and completed postdoctoral studies in Germany using DAAD and Humboldt scholarships. In 2019 he became a member of the National Academy of Sciences of Argentina. Afterwards, he obtained the Konex Prize in Science and Technology in 2023 and in 2024 the Agustín Arévalo Prize of the Ibero-American Society of Electrochemistry.

Until 2012, he developed research work in nanoscience and nanotechnology using computational modeling. In 2013, he participated in the foundation of the Laboratory of Sustainable Energies of the UNC, and since then, he has devoted his work to the study of Li-ion and post-Li-ion technologies.