Keynote speaker

Mauricio Isaacs[1,2,3]
[1]Pontificia Universidad Católica de Chile. Facultad de Química y de Farmacia. Departamento de Química Inorgánica. Campus San Joaquín. Vicuña Mackenna 4860 Macul. Santiago. Chile
[2]Millennium Institute on green ammonia as energy vector MIGA. Campus San Joaquín. Vicuña Mackenna 4860 Macul. Santiago. Chile.
[3]Centro de Investigación en Nanotecnología y Materiales Avanzados, CIEN-UC. Campus San Joaquín. Vicuña Mackenna 4860 Macul. Santiago. Chile.

Tandem electrocatalysis in electrochemical processes relevant to the environment and energy: Carbon Dioxide and Green Ammonia

The phenomenon of climate disruption that we are facing as a society has challenged us to understand how the world will function in the years to come.
One of these challenges is the use of renewable energy, which due to its intermittency forces us to store it either in devices such as batteries or chemical compounds, such as hydrogen, ammonia or synthetic fuels, this last strategy is also known as "power-to-x". All of the aforementioned electrochemical processes face both thermodynamic and kinetic challenges that can be addressed through electrocatalysis. In this context, tandem electrocatalysis is a phenomenon that includes more than one active center that allows breaking the linear scales of energy, thus improving the performance of the aboved described reactions.
Two cases are presented, the electrochemical reduction of CO_2, where copper nanocubes doped with Zn or Ag were used as electrocatalysts, which was effective in converting CO_2 selectively into 2-carbon chemical compounds.
In the second case, the electrochemical reduction of nitrogen, where transition metal chalcogenides were used, with special attention to Mo and Fe. These catalysts allowed the efficient production of ammonia from nitrogen, where the subsequent incorporation of ionic liquids increased the faradic efficiency of the systems studied.

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