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CONSTRUCTION OF CHEMICALLY MODIFIED ELECTRODES TO DESIGN ELECTROCATALYTIC, PHOTOVOLTAIC DEVICES AND ELECTROCHEMICAL DETECTORS

The main goal of this talk is to describe how the systemic concept of chemistry nano-architectures has been employed as the main strategy for designing chemically modified electrodes that have been utilized for attending to alternative energy, environmental, and public health problems. In this way, it will share with the audience some relevant results obtained in my laboratory for preparing dendrimers-modified nanoparticulate TiO2 photoanodes for constructing efficient dye-sensitized solar cells, Ni(II) cyclam-modified nanocrystalline TiO2 anodes for urea oxidation and simultaneous H2 evolution on Pt cathodes, optically transparent electrodes modified by Ag, Cu or bimetallic Ag|Cu nanoclusters for CO2 electrochemical reduction to CO, stainless steel mesh electrodes modified by TiO2|carbon nanocomposites for CO2 photoconversion to ethanol, and glassy carbon electrodes modified by dendrimers-caped Au nanoparticles for the amperometric detection of human serum uric acid and its application to the early diagnosis of hypo/hiper-uricemia and gestational preeclampsia.

Keywords

chemically modified electrodes, systemic chemistry, nanoarchitectures, electrocatalysis, photovoltaics, electroanalysis.

Reference

J. A. Banda-Alemán, G. Orozco, E. Bustos, S. Sepúlveda, J. Manríquez, J. CO2 Util. 27 (2018) 459-471. https://doi.org/10.1016/j.jcou.2018.08.0

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Author approval

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