

Photoelectrochemical CO₂ Conversion: from catalyst to their application in an electrolyzer

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Abstract: The use of CO₂ as a reagent for the generation of organic compounds, with high energy content for reuse in the industrial process, becomes a motivation because it contributes to the reduction of this pollutant in the atmosphere. One of the promising technologies for this conversion is photoelectrocatalytic reduction, since it makes the process both economically and environmentally viable. However, selective conversion of CO₂ to fuels suffers from a low reaction rate and low selectivity, and it is influenced by the catalyst structure and operating conditions of the electrolyzer. Here it will be discussed the heterogeneous photocatalytic reduction of CO₂ on nanostructured TiO₂, modified with metal oxides. The influences of different methods of confection of nanostructured photocatalytic materials on the characteristics of semiconductor and on the photogenerated products from CO₂ reduction are considered.

Acknowledgment:

LNNano - Brazilian Nanotechnology National Laboratory, CNPEM/MCTI for MEV-FEG characterization; Núcleo de Instrumentação para Pesquisa e Ensino (NIPE) of Centro de Equipamentos e Serviços Multiusuários (CESM-ICAQF) of UNIFESP-Campus Diadema and LENCA – Laboratório de Engenharia e Controle Ambiental. This study was also financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001 and FAPESP - Fundação de Amparo à Pesquisa do Estado de São Paulo (Process Number 2014/50945-4)

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