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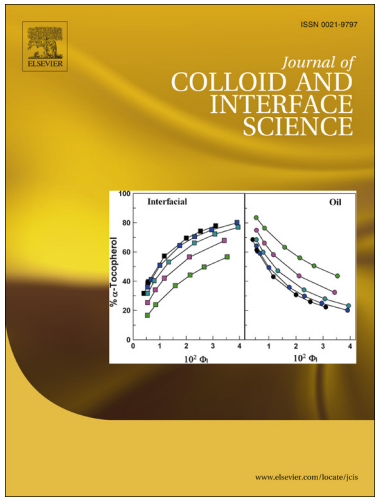

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Bimetallic PtSn/C catalysts obtained via SOMC/M for glycerol steam reforming

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Abstract

A detailed study on the preparation of bimetallic PtSn/C catalysts using surface-controlled synthesis methods, and on their catalytic performance in the glycerol steam reforming reaction has been carried out. In order to obtain these well-defined bimetallic phases, techniques derived from Surface Organometallic Chemistry of Metals (SOMC/M) were used. The preparation process involved the reaction between an organometallic compound ($(C_4H_9)_4Sn$) and a supported transition metal (Pt) in a H_2 atmosphere. Catalysts with Sn/Pt atomic ratios of 0.2, 0.3, 0.5, and 0.7 were obtained, and characterized using several techniques: ICP, H_2 chemisorption, TEM and XPS. These systems were tested in the glycerol steam reforming varying the reaction conditions (glycerol concentration and reaction temperature). The best performance was observed for the catalysts with the lowest tin contents (PtSn0.2/C and PtSn0.3/C). It was observed that the presence of tin increased the catalysts' stability when working under more severe reaction conditions.

Keywords. Bimetallic catalysts, PtSn/C, Surface Organometallic Chemistry on Metals, glycerol steam reforming.