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Agro-Industrial Waste as a Source of Catalyst Production

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Abstract : This work deals with the bio-waste valorization approach for catalyst development, the use of products derived from biomass as raw material and the obtaining of biofuels. In this research, activated carbons were synthesized from the orange peel using different synthesis conditions. With the activated carbons obtained with the best structure and texture, PtIr bimetallic catalysts were prepared. Carbon activation was carried out through a chemical process with phosphoric acid as an activating agent, varying the acid concentration, the ratio substrate/activating agent and time of contact between them. The best support was obtained using a carbonization time of 1 h, the temperature of carbonization of 470oC, the phosphoric acid concentration of 50 wt.% and a BET area of 1429 m2/g. Subsequently, the metallic nanoparticles were deposited in the activated carbon to use the solid as a catalytic material for the hydrogenation of HMF to 2,5-DMF. The catalyst presented an excellent performance for biofuels generation.

Keywords : orange peel, bio-waste valorization, platinum, iridium,5-hydroxymethylfurfural
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