

Ru/TiO₂ 催化剂上甘油氢解制 1,2-丙二醇

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摘要 采用浸渍法制备了负载型 Ru/TiO₂ 催化剂, 利用 X 射线衍射、X 射线光电子能谱、高分辨透射电镜、N₂ 吸附和电感耦合等离子体原子发射光谱等方法对催化剂进行了表征, 并考察了反应温度、H₂ 压力、甘油溶液浓度、催化剂用量和碱性添加物等因素对 Ru/TiO₂ 上甘油氢解反应性能的影响。结果表明, 在 170 °C 和 3 MPa 的温和反应条件下, 以 LiOH 为添加物, 甘油转化率和 1,2-丙二醇选择性分别高达 89.6% 和 86.8%。

关键词: 钌 二氧化钛 甘油 氢解 1,2-丙二醇

Abstract: The supported Ru/TiO₂ catalyst was prepared by the impregnation method. The physicochemical properties of the catalyst were characterized by X-ray diffraction, X-ray photoelectron spectroscopy, high-resolution transmission electron microscopy, N₂ adsorption, and inductively coupled plasma-atomic emission spectroscopy. The effects of reaction temperature, hydrogen pressure, glycerol concentration, catalyst amount, and base additives on the catalytic performance of Ru/TiO₂ in the glycerol hydrogenolysis reaction were investigated. Under mild reaction conditions (170 °C, 3 MPa), using LiOH as additive, the conversion of glycerol and the selectivity for 1,2-propanediol were as high as 89.6% and 86.8%, respectively.

Keywords: ruthenium, titania, glycerol, hydrogenolysis, 1,2-propanediol

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