

**APPLICATION OF PALLADIUM NANOPARTICLES SUPPORTED ON  
SILICA IN THE GLYCEROL OXIDATION USING  
SUPERCRITICAL CARBON DIOXIDE**

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The glycerol produced by biodiesel process is considered a product of low commercial value. However, it can be useful to produce a variety of chemicals, including “fine chemicals”, of high commercial value through oxidation. The objective of this work is to apply palladium nanoparticles supported on silica (Pd/SiO<sub>2</sub>) for glycerol oxidation in supercritical carbon dioxide. The experiments were performed in a batch reactor with mechanical agitation and using peroxide hydrogen as oxidant. The temperature and pressure ranged between 60 to 120 °C and 50 to 200 bar, respectively. The evaluation of converting glycerol was by high performance liquid chromatography (HPLC). The results of catalytic performance in supercritical fluid were satisfactory compared with conventional reaction media, which had pronounced effects due to better solvation capacity of carbon dioxide in supercritical media. From our point of view, the great challenge is to find highly active catalysts, which are also highly selective for the desired product and at the same time, new reaction media for reactions.

**Keywords:** Palladium, Glycerol, Oxidation, Carbon Dioxide, Supercritical.

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