

### Activity and stability of bifunctional catalysts on the aqueous-phase hydrodeoxygenation of 1-propanol

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Aqueous-phase hydrodeoxygenation (APHDO) over bifunctional catalysts was investigated as one of the methods to reduce the oxygen content of biomass derivatives for producing biofuels. In this process, the oxygen functionality is repeatedly removed through the dehydration on the acid support, niobia-based mixed oxide aerogel, followed by hydrogenation over Pt metal. In order to simplify the product distribution and compare the acid and metal contribution, 1-propanol, containing one hydroxyl group, was used as a model compound for this reaction. Niobia aerogel and niobia-based mixed oxide aerogels were synthesized by sol-gel method, supercritical drying, and then calcination. Pt was loaded by an incipient wetness technique. The amorphous niobia aerogel was crystallized in the course of the reaction due to the severe reaction condition of APHDO performed at 230°C and 35 bar H<sub>2</sub>. However, the niobia aerogel mixed with silica or alumina was stabilized, thus showing the better catalytic performance.