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Authors: Rongrong Li, Jia Zhao, Deman Han, Xiaonian Li

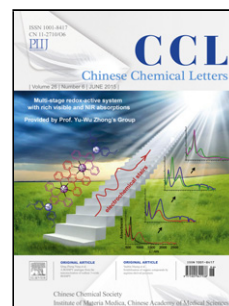
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Original article

Pd/C modified with Sn catalyst for liquid-phase selective hydrogenation of maleic anhydride to gamma-butyrolactone

Rongrong Li ^{a, b}, Jia Zhao ^a, Deman Han ^{b, *}, Xiaonian Li ^{a, **}^a Industrial Catalysis Institute of Zhejiang University of Technology, Hangzhou 310014, China^b School of Pharmaceutical and Chemical Engineering, Tai Zhou University, Taizhou 317000, China

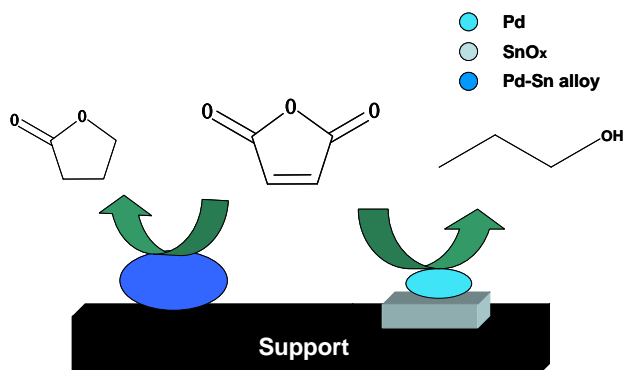
* Corresponding author.

E-mail address: hdm@tzc.edu.cn (Deman Han) .

** Corresponding author.

E-mail address: xnli@zjut.edu.cn (Xiaonian Li).

Graphical Abstract



The types of alloy phase and the amounts of the surface Pd-SnO(*x*) sites altered along with Sn/Pd mass ratios from 0–1.0 synthesized in the process of preparation. The maximum reaction rate was 0.57 mol-GBL/(mol-Pd·min) and selectivity was 95.94% when the Sn/Pd mass ratio was 0.6. It might be attributed to the formation of Pd₂Sn alloy and less amounts of Pd-SnO(*x*) sites.

ABSTRACT

Pd catalysts suffered from poor selectivity and stability for liquid-phase hydrogenation of maleic anhydride (MA) to gamma-butyrolactone (GBL). Thus, Pd/C catalysts modified with different Sn loadings were synthesized, and characterized by XRD, XPS, TEM and elemental mapping. The types of alloy phase and the amounts of the surface Pd-SnO(*x*) sites altered along with Sn/Pd mass ratios from 0–1.0 synthesized in the process of preparation. The maximum reaction rate was 0.57 mol-GBL/(mol-Pd·min) and selectivity was 95.94% when the Sn/Pd mass ratio was 0.6. It might be attributed to the formation of Pd₂Sn alloy and less amounts of Pd-SnO(*x*) sites.

Keywords:

Bimetallic catalysts

Sn/Pd mass ratio

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