Selective Hydrogenation of Levulinic Acid to ɣ-Valerolactone over Carbon-supported Noble metal Catalysts

Pravin Upare[1,2], 이종민[1], 황동원[1], Shiva B. Halligudi[1],
황영규[1,2], 장종산[1,2,*]

[1]Research Center for Nanocatalysts, Korea Research Institute of Chemical Technology;
[2]School of Science, University of Science and Technology (UST)
(jschang@krict.re.kr[*])

Selective hydrogenation of biomass derived levulinic acid (LA) to ɣ – valerolactone (GVL) has been efficiently catalyzed by Ru, Pt and Pd noble metal supported on carbon under vapor phase in a continuous down flow fixed-bed reactor system. Among the catalysts, 5 wt. % Ru/C gave GVL with 100% selectivity at 100% LA conversion up to 240 h (10 days) without loss in its activity. The higher catalytic activity and product selectivity of 5 wt. % Ru/C catalyst has been attributed to the higher dispersion of metallic Ru over carbon in nano-sizes compared to Pt and Pd catalysts.