A Mesoporous Silica-Supported Ruthenium Catalyst for Metathesis

Significance: A mesoporous silica-supported catalyst 6 for metathesis was prepared and applied to a circulating flow reactor system. Thus, the Grubbs II catalyst was immobilized on siliceous mesocellular foam (MCF) microparticles 5 to give the catalyst 6. The ring-closing metathesis of dienes 7–12 was performed in a circulating flow reactor system filled with 6 (225 mg; reactor size = 4.6 mm x 50 mm) at 50 °C with a flow rate of 5 mL/min to afford the corresponding products 13–18 in 93–99% yield.

Comment: The mesoporous silica-supported catalyst 6 was recycled nine times without or with loss of catalytic activity in a circulating flow reactor (15: 1st use: 99% yield, 4th use: 98% yield, 7th use: 97% yield, 10th use: 96% yield 18: 1st use: 94% yield, 2nd use: 82% yield, 4th use: 78% yield). The authors mentioned that their circulating flow system was superior to the continuous flow system in terms of recyclability.