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A Microchemical System with Continuous Recovery and Recirculation of Catalyst-Immobilized Magnetic Particles
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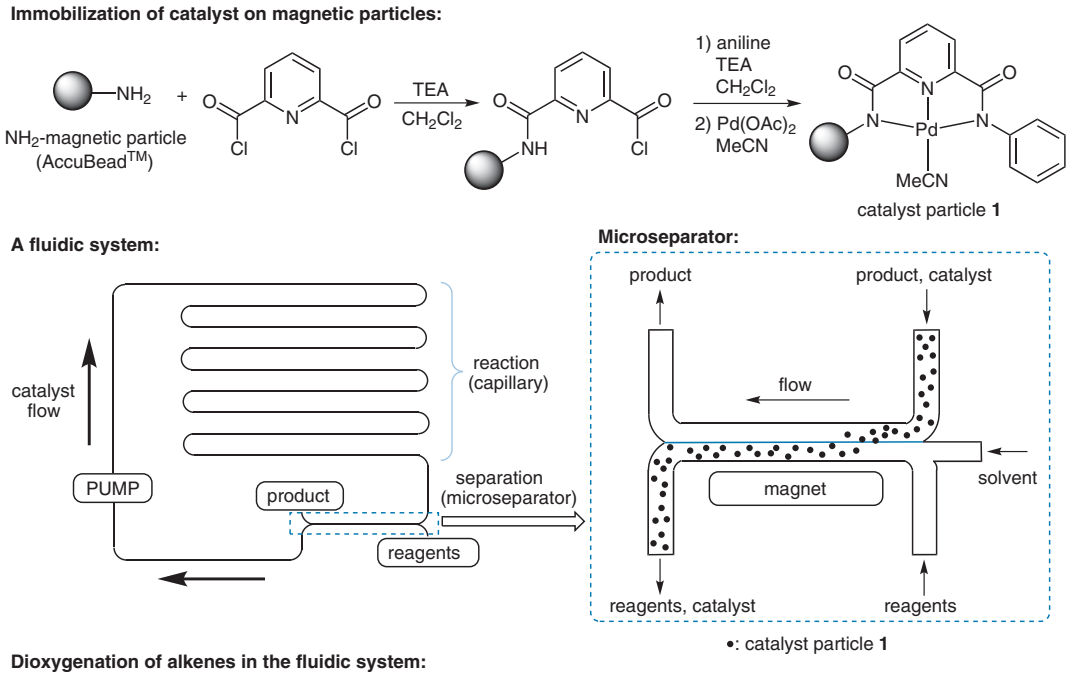
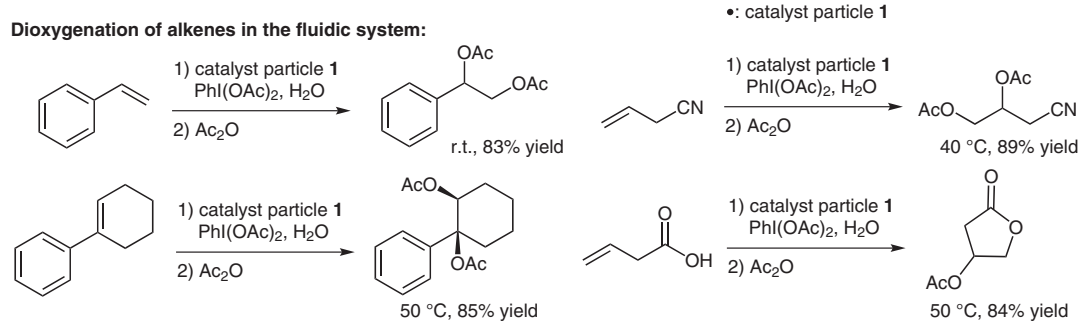
A Flow Reaction System Using Catalytic Magnetic Particles





Significance: A novel fluidic system using catalytic magnetic particles was developed. In the separator part (microseparator), the product stream with the catalytic magnetic particles merged with the solvent stream, and the particles in the product stream moved into the solvent stream with the aid of the external magnetic field. Almost no mixing and thus, almost complete separation occurred as a result of laminar flow. The dioxygenation of alkenes was carried out in the fluidic system using catalyst particle **1** (4 examples, 83–89% yield).

Comment: The flow system consists of a microfluidic chip type of a microseparator [poly(dimethylsiloxane): width: 300 μm, depth: 50 μm, length: 20 mm] and a capillary microtube reactor [poly(tetrafluoroethylene): diameter: 500 μm, length: 260 cm]. In the preparation of magnetic catalyst **1**, commercially available magnetic particles having silica surface functionalized with primary amine groups were used (average size: 1.99 mm, AccuBead, bioneer, Korea).

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Category
Polymer-Supported Synthesis

Key words
magnetic particles
microseparator chip
capillary microtubes
flow chemistry