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Catalysts from Block Copolymers DAVID DURKEE, Univ. of California-Berkeley, NITASH BALSARA, Univ. of California-Berkeley, ALEXIS BELL, Univ. of California-Berkeley — Homogeneous catalysts are widely used to catalyze chemical reactions in the liquid phase; however, the separation of the reactants and products from such a catalyst can be difficult and often limits their use in practice. For this reason there has been considerable interest in the heterogenization of homogeneous catalysts. The use of polymers for this purpose has been particularly attractive because of the availability of a wide range of polymeric structures and methods for catalyst incorporation. Our novel approach for heterogenizing homogeneous catalysts that involves the use of microphase separated block copolymers. Block copolymers are synthesized from a crosslinkable monomer that forms a supporting gel upon crosslinking, an organometallic monomer that is catalytically active, and a depolymerizable block that can be removed to form mass transfer pathways, or pores. When placed in a solvent, the polymer gel swells to facilitate transport of the reactants to the active centers and the transport of products from these centers. This is functionally similar to the synthesis of mesoporous siliceous materials created by an amphiphilic, structure-directing agent. However, in this system, placement of the catalyst site is also controlled by self-assembly.

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