Porous Organic Polymers for the Heterogeneous Ring Expanding Carbonylation of Cyclic ethers to Lactones

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The development of an industrially viable sustainable chemical process for the production of β-lactones remains a challenging task. To that end ring expansive carbonylation of epoxides gained increased attention as it involves atom economic production of β-lactone directly from epoxides and carbon monoxide. In an overview of ring expansive carbonylation of epoxides the recent developments accomplished the chemical process have been rationalized. In this talk, a novel synthetic strategy for the direct heterogenization of active ring expansive carbonylation catalysts will be presneted. The heterogenized catalysts thoroughly characterized and found that the coordination environment is identical to that of their homogeneous counterparts. Among the two types of heterogenized complexes, the metallosalphen-based catalysts is effective for the ring expansive carbonylation of propylene oxide and the second system Aluminum porphyrin based heterogenized catalyst, is highly effective for the ring expansive carbonylation of variety of epoxides.