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Insights into the Asymmetric Heterogeneous Catalysis in Porous Organic Polymers: Constructing a TADDOL-Embedded Chiral Catalyst for Studying the Structure–Activity Relationship

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An Organo Porous Polymer Catalyst for Asymmetric Alkylation with Et₂Zn

Preparation of the TADDOL-CPP catalyst:

Significance: A chiral $\alpha,\alpha,\alpha',\alpha'$ -tetraaryl-1,3-dioxolane-4,5-dimethanol-based chiral porous polymer (TADDOL-CPP) was prepared and applied to the asymmetric alkylation of aromatic aldehydes with Et₂Zn in the presence of [Ti(Oi-Pr)₄] to give the corresponding products **1a–i** in up to 96% yield with up to 94% ee.

Comment: The TADDOL-CPP as well as the TADDOL-CPP/Ti catalysts were characterized by ¹³C CP/MAS NMR spectroscopy, TGA, BET, XRD, TEM and ICP analyses. TADDOL-CPP was recovered by centrifugation and reused ten times to give **1a** with slight loss of the catalytic activity (91% ee to 75% ee).

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