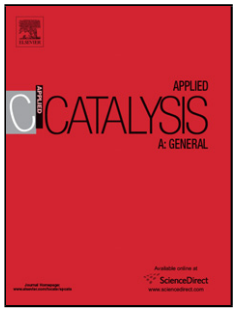

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Improved methodology for non-covalent immobilization of *tert*-butyl-azabis(oxazoline)-copper complex on Al-MCM41

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Highlights

- Chiral azabox-copper complex was immobilized on Al-MCM41 in a non-covalent way.
- $Cu(OTf)_2$ was first impregnated by incipient wetness and then treated at 450ºC.
- Final modification with azabox leads to stable immobilized complexes.
- Better results in enantioselective cyclopropanation are obtained at high temperature.

Abstract

Copper sites are supported on Al-MCM41 by thermally treating copper(II) triflate that was deposited using the incipient wetness method. The change of the chemical state of the triflate anions following thermal treatment is monitored using TGA and SEM-EDX. Thermal treatment yields copper sites that then can be modified with chiral *tert*-butyl-azabis(oxazoline) by adding a solution of this ligand to the support using incipient wetness. The catalyst produced in this way is efficient and stable with good enantioselectivity, and can be used in the cyclopropanation of styrene with ethyl diazoacetate under conditions employing an elevated temperature. The use of thermal treatment in the catalyst preparation method produces catalysts that are superior to the solids prepared by cation exchange or incipient wetness of the pre-formed complex.

Keywords: asymmetric catalysis; immobilized catalysts; mesoporous materials; bis(oxazolines); copper;