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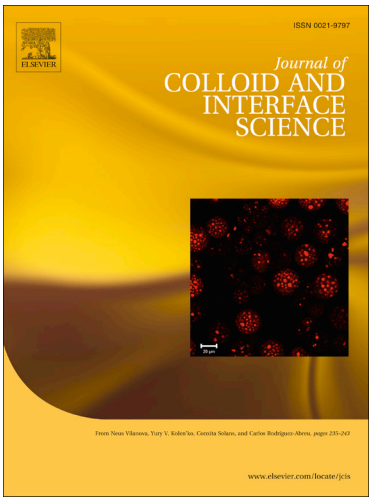

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Tian-Tian Li, Yu Liu, Shi-Chao Qi, Xiao-Qin Liu,* Li Huang, and Lin-Bing Sun*

Jiangsu National Synergetic Innovation Center for Advanced Materials (SICAM), State Key Laboratory of Materials-Oriented Chemical Engineering, College of Chemical Engineering, Nanjing Tech University, Nanjing 210009, China

*Corresponding author. E-mail: liuxq@njtech.edu.cn; lbsun@njtech.edu.cn

ABSTRACT: The design of new type of solid strong base with ideal activity, stability, and reusability is strongly urged by the growing demand of green chemistry and sustainable development. In this study, a new type of mesoporous solid strong base, denoted as CaO/*m*SiO_2/Fe_3O_4, is successfully fabricated by successively coating SiO_2 onto Fe_3O_4 magnetic nanoparticles and loading CaO into the mesoporous SiO_2. Compared with a series of other typical solid bases, the CaO/*m*SiO_2/Fe_3O_4 exhibits higher activity towards the synthesis of dimethyl carbonate by the transesterification of ethylene carbonate and methanol. The activity of the CaO/*m*SiO_2/Fe_3O_4 is not observed to decrease obviously even after sextic catalyst recirculation, and in particular, the recovery of the catalyst without quality loss is very convenient due to the good magnetic responsiveness of the Fe_3O_4 cores.

Keywords: *solid strong base; core-shell architecture; magnetic response; mesoporous silica; dimethyl carbonate*