

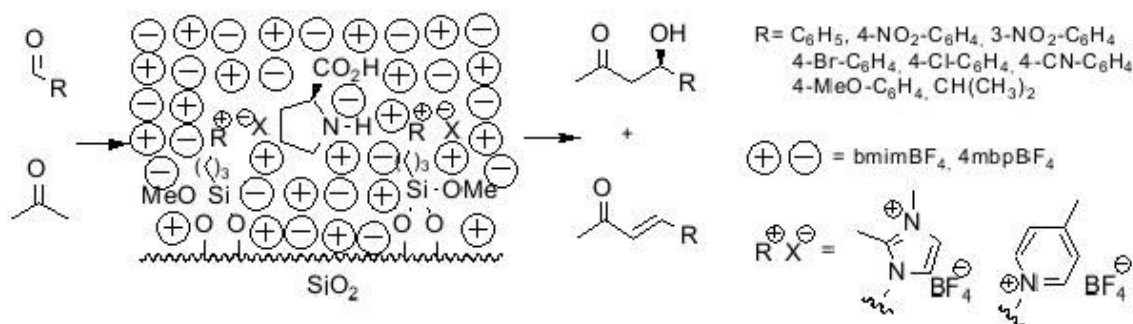
## New recyclable materials for L-proline-catalyzed aldol reactions

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The aldol reaction is one of the most important carbon-carbon bond-forming reactions in synthetic organic chemistry. Enantiomerically pure  $\beta$ -hydroxy ketones are important building blocks for the synthesis of polyfunctional compounds and natural products. Catalysis of asymmetric reactions by simple metal-free organic molecules (organocatalysis) is currently receiving immense interest (1). Among such reactions, the direct asymmetric intermolecular organocatalytic aldol reaction mediated by L-proline, which furnished  $\beta$ -hydroxy ketones, has been reported (2). The L-proline catalyzed aldol reaction is usually carried out under homogeneous condition. The separation of the products from the reaction mixture and the recovery of the catalysts are the major disadvantages in the homogeneous catalytic process. For such economical and environmental reasons the recovery and reuse of such catalysts has become an important area of research. More recently, Room-Temperature Ionic Liquid (RTIL) have become very useful solvents for synthesis and catalysis.



Here we report new materials for L-proline recycling. These materials have been applied to the L-proline-catalyzed aldol reaction (3). The L-proline has been supported on the surface of modified silica gels with a monolayer of covalently attached ionic liquid with or without additional adsorbed ionic liquid. Good yields and ee values, comparable with those obtained under homogeneous conditions have been obtained. Moreover, these materials are easily recovered and studies about their reuse will be presented.

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- (3) Preliminary communication: Gruttadauria, M.; Riela, S.; Lo Meo, P.; D'Anna, F.; Noto, R. *Tetrahedron Lett.* **2004**, *45*, 6113.