Supplementary Information

Chitosan Functionalized Ionic Liquid as a Green, Recyclable Biopolymer-Supported Catalyst for Cycloaddition of CO_2

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1. FT-IR

To ascertain the chemical immobilization of EMImX on CS, FT-IR spectroscopic studies were carried out using CS-EMImBr as an example. As seen in Fig.1S, EMImBr (spectra A) displays four typical peaks centered at 1067, 1171, 1573 and 1636 cm^{-1} associated with stretching frequencies of the imidazolium ring, in which a typical strong peak centered at about 1570 cm^{-1} corresponding to the stretching frequency of the functional group -C=N-. The characteristic peaks of aromatic band stretches at 2850-3130 cm^{-1}. There are two characteristic peaks of chitosan (spectra B) at 3455 and 1093 cm^{-1}. In contrast with the spectras of A and B, a characteristic peak of -CN stretching vibration centered at about 1595 cm^{-1} in CS-EMImBr (spectra C) suggesting the covalent immobilization of EMImBr to CS.

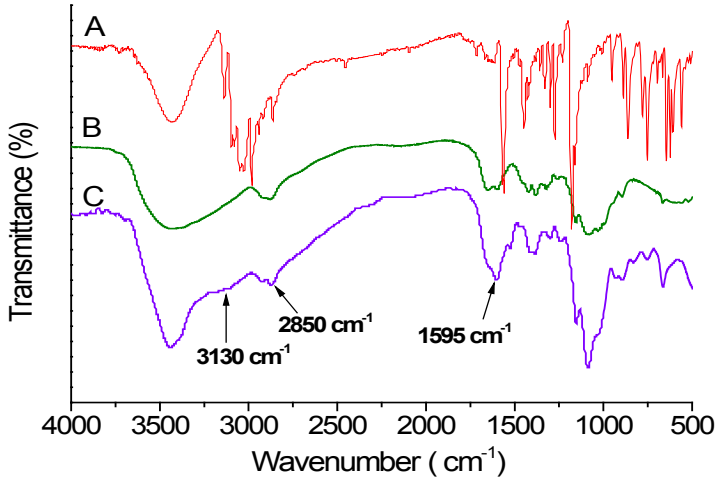

Fig. 1S FT-IR spectra comparison of EMImBr (A), CS (B) and CS-EMImBr (C).

2. Scanning electron microscopy (SEM)

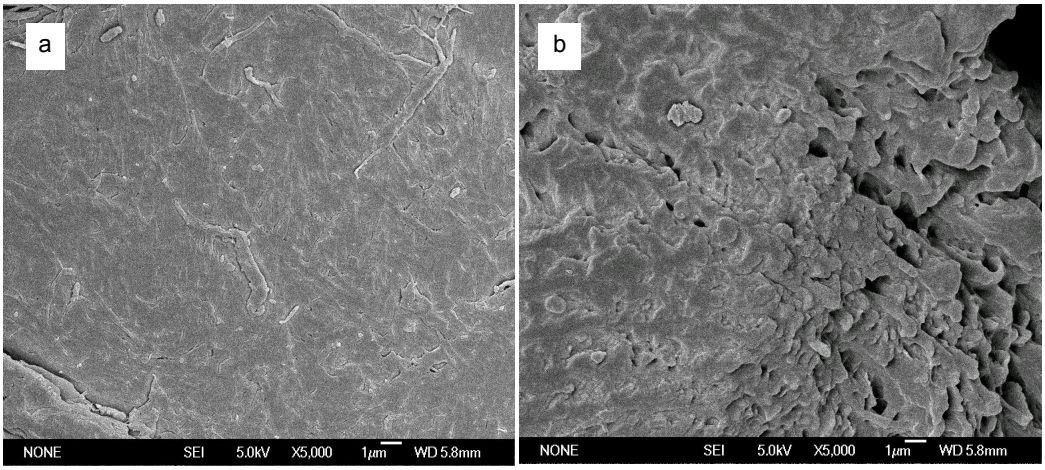

Fig. 2S Scanning electron microscopy images of CS (a) and CS-EMImBr (b).

3. Thermogravimetric analysis (TGA)

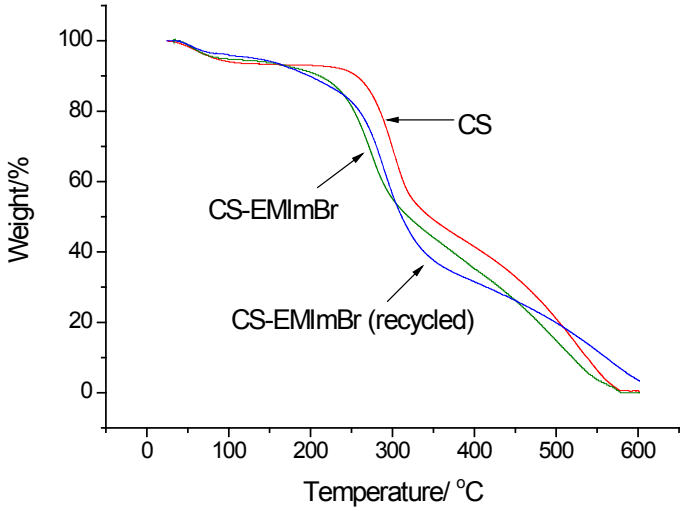

Fig. 3S Thermogravimetric curves for CS, CS-EMImBr and four times recycled CS-EMImBr.