Self-assembled composites of anionic Zn(salen) complexes and triphenylmethane derived polycations as catalysts for the addition of CO_2 to epoxides

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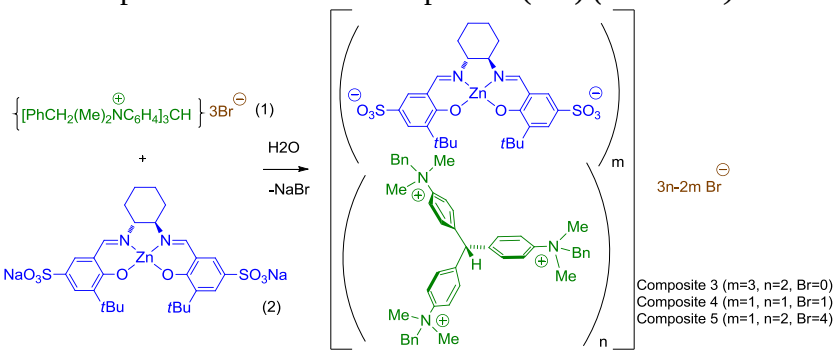
The combination of compounds **1** and **2** in different proportions generated a set of assembled supramolecular ionic composites (**3-5**) *(Scheme 1)*.



Scheme 1.

For compound **3**, the crystal structure is determined.(*Figure 1*). It is constructed of rather short layers of polyanions composed of several molecules of **2** interconnected by their sulphonate groups coordinated at the apical positions of the neighboring central metal ions. The countercations of **1** were positioned between the layers. The powder X-ray diffraction pattern of composite **3** is shown in *Figure 2*. The experimental (blue curve) and calculated based on the single-crystal X-ray structure (red curve) powder patterns are similar. Composite **3** was also analysed by nitrogen porosimetry. It was found to contain mesopores and macropores with a BJH adsorption average pore radius of 10.4 nm, a BET surface area of 39.3 $m^2\ g^{-1}$ and a BJH adsorption pore volume of 0.2 $cm^2\ g^{-1}$.

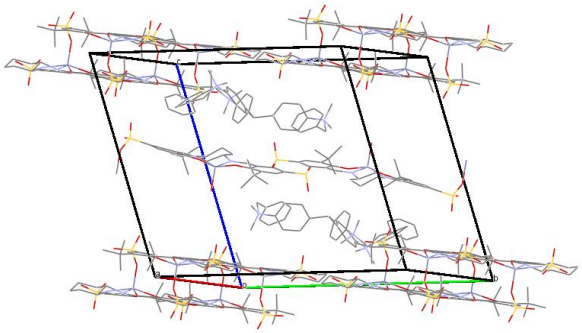


Figure 1.

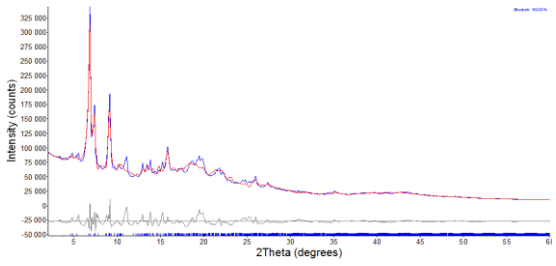
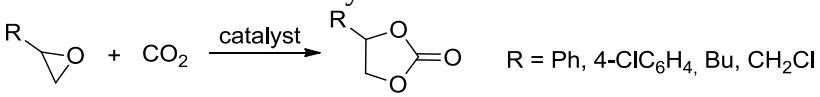


Figure 2.

The heterogeneous system **5** was catalytically competent in the reaction between styrene oxide and carbon dioxide and its activity also increased on its reuse.



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