Supplementary Information

Mesoporous Inorganic Salts with Crystal Defects: Unusual Catalysts and Catalyst Supports

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Results and Discussion

$$PF_6^- + H_2O + La^{3+} \rightarrow PF_5 \cdot H_2O + LaF_3$$

Scheme S1. The reaction equation of synthesizing LaF_3 using $N(Bu)_4PF_6$ and $La(NO_3)_3$.



Figure S1. The solubility (mole fraction) of $N(Bu)_4PF_6$ in OmimCl at different temperatures.



Figure S2. Pore size distribution of the micropores of LaF_3 synthesized at $x_2 = 0.5$.



Figure S3. Characterizations of the LaF₃ particles synthesized at $x_2=0.17$: (a) SEM image; (b) TEM image; (c) XRD pattern; (d) N₂ adsorption/desorption isotherm and pore size distribution (the inset).



Figure S4. SEM and TEM images of commercial LaF_3 (a-b) and La-BTC MOF (c-d) synthesized in this work.



Figure S5. XRD pattern of La-BTC MOF synthesized in this work.



Figure S6. The TEM and SEM images of Ru/LaF_3 and commercial Ru/C catalyst: (a) TEM image of Ru/LaF_3 catalyst with 1.0 wt% Ru; (b) TEM image of commercial Ru/C catalyst with 5.0 wt% Ru; (c) SEM image of commercial Ru/C catalyst with 5.0 wt% Ru; (a and b) show the size distribution of Ru particles.



Figure S7. The dependence of the conversion of LA on reaction time at 70 °C (a) and 100 °C (b). Other conditions were the same as that for entries 2 and 3 in Table 4.