Supplementary material

Synthesis of glycerol carbonate over 2D coordination polymer building with Nd\(^{3+}\) ions and organic ligand

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**Fig. S1.** Electron density maps observed for \(Nd-5sis\) around the Nd\(^{3+}\) ions. (a) in 3D projection and (b) in 2D projection.

**Fig. S2.** Electron density maps observed for \(Nd-5sis\) around the planes of the aromatic ring of \(Nd-5sis\). (a) in 3D projection and (b) in 2D projection.
Fig.S3. Residual electronic density map of *Nd-5sis* after refinement process. (a) in 2D projection and (b) in 3D projection for Nd$^{3+}$ ions.

Fig.S4. Thermal analyses result for *Nd-5sis* in an air atmosphere.
**Fig.S5.** Thermal analyses result for *Nd-5sis* in a nitrogen atmosphere.

**Fig.S6.** Effect of stirring speed of the system on the glycerol conversion. Reaction conditions: 12.61 g glycerol, 8.225 g urea, 140°C, 10 KPa.
Fig.S7. Effect of Nd-5sis amount on the glycerol conversion. Reaction conditions: 12.61 g glycerol, 8.225 g urea, 1.5 h, 140°C, 10 KPa.

Fig.S8. $^{13}$C NMR (400 MHz, in deuterated acetone) spectrum of the reaction. The system is principally formed by glycerol, glycerol carbonate and residual urea.
Fig.S9. Nitrogen adsorption/desorption isotherm at 77 K in Nd-5sis.

Fig.S10. Spectroscopic data for the Nd-5sis recovered. (a) Nd-5sis before the reaction. (b) Spectrum in the infrared region for the Nd-5sis after the first cycle of the reaction and (c) Raman spectrum for the Nd-5sis after the first cycle of the reaction. Note: Catalyst washed with water and methanol to extract excess reagents/products in the material.
Fig. S11. X-ray diffraction data for the Nd-5sis recovered. (a) Nd-5sis before the reaction. (b) Nd-5sis after the reaction and washed with water and methanol. (c) Nd-5sis after recrystallization process with water and ethanol. (d) Nd-5sis after the fourth cycle, performed after recrystallization for six days at 160 °C with water and ethanol.