

## Supplementary material

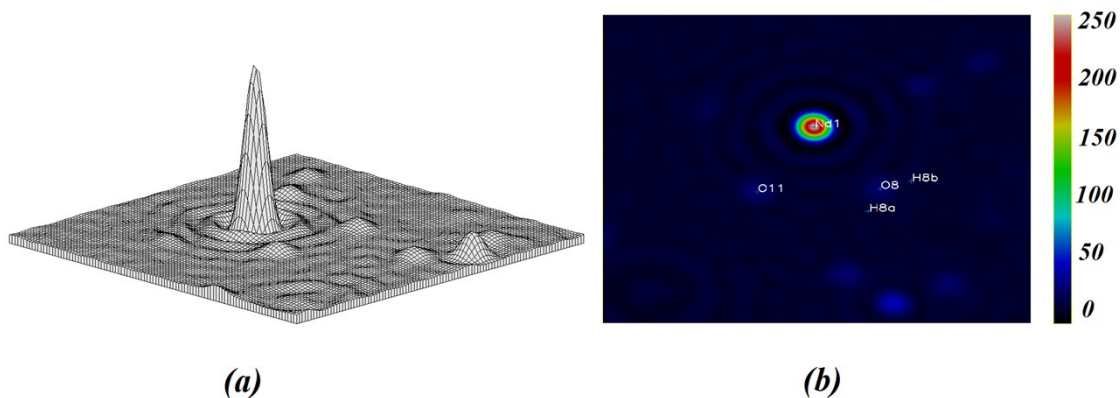
### Synthesis of glycerol carbonate over 2D coordination polymer building with Nd<sup>3+</sup> ions and organic ligand

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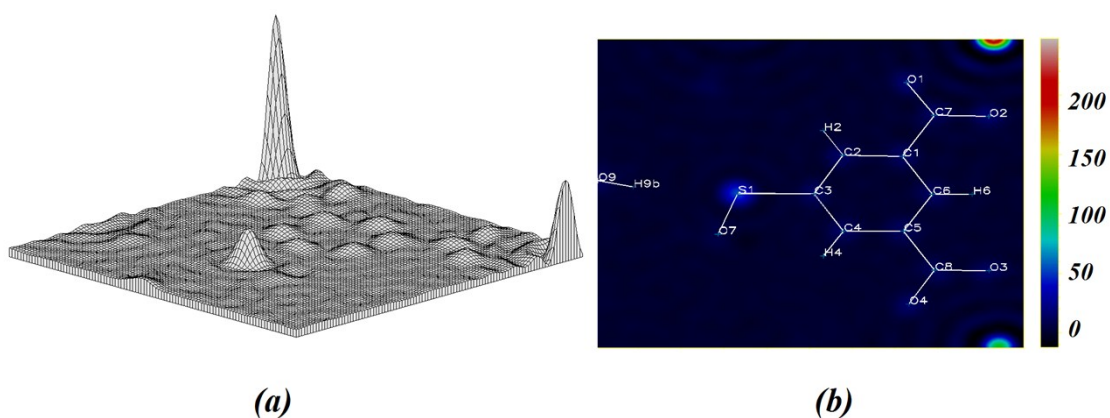
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**Fig.S1.** Electron density maps observed for *Nd-5sis* around the Nd<sup>3+</sup> ions. (a) in 3D projection and (b) in 2D projection.



**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.

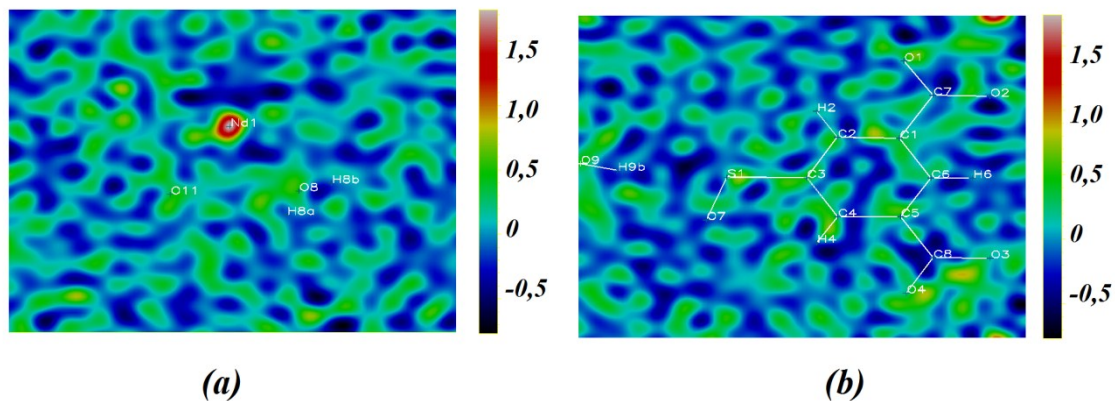


Fig.S3. Residual electronic density map of *Nd-5sis* after refinement process. (a) in 2D projection and (b) in 3D projection for  $\text{Nd}^{3+}$  ions.

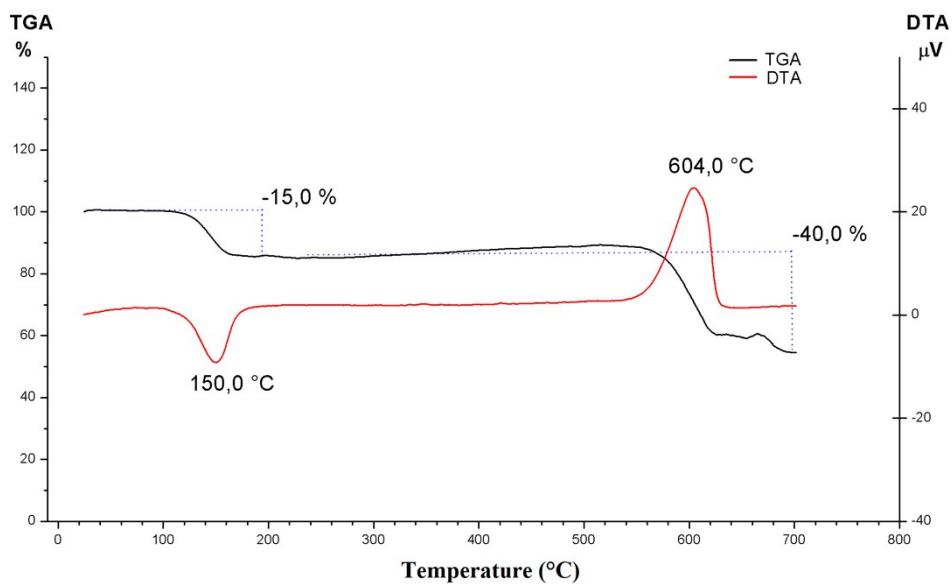
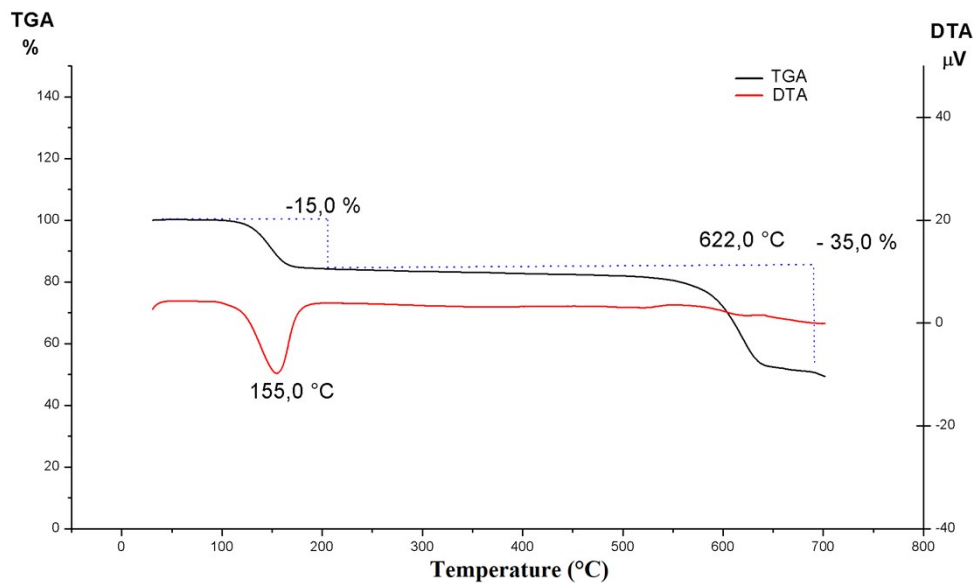
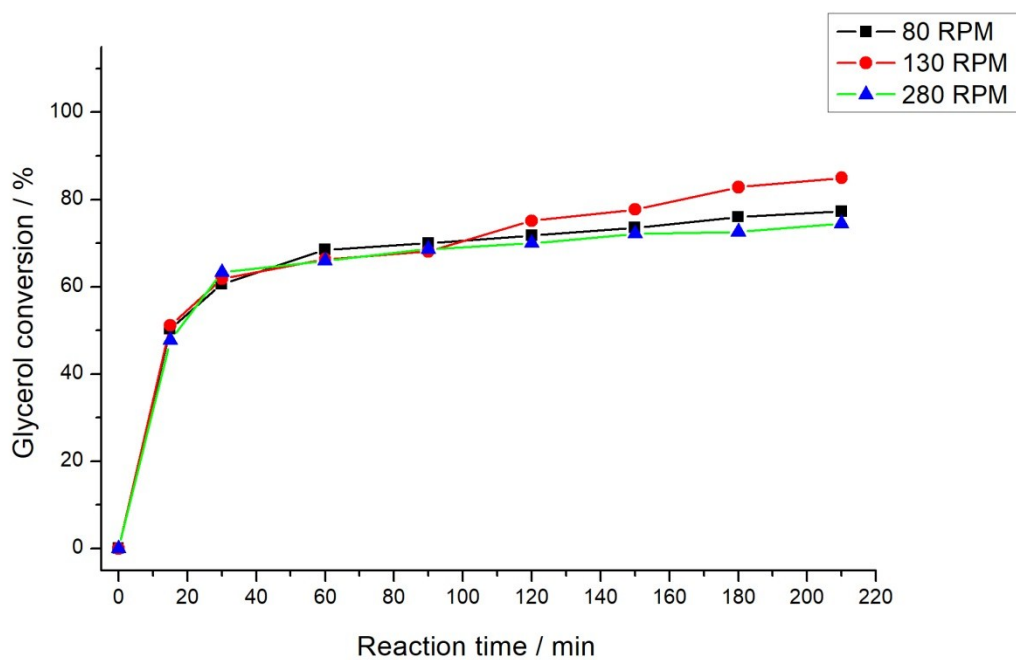


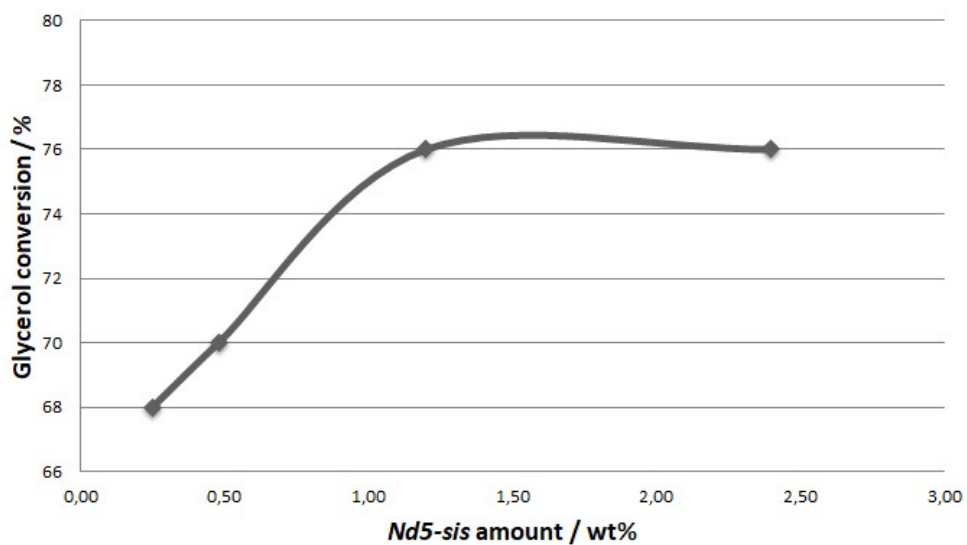
Fig.S4. Thermal analyses result for *Nd-5sis* in an air atmosphere.



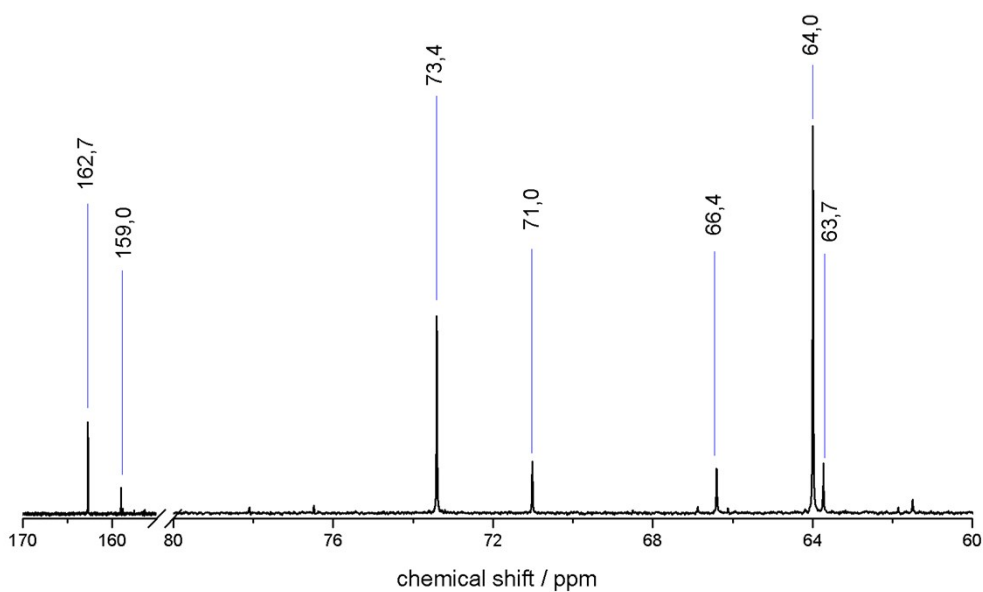
**Fig.S5.** Thermal analyses result for *Nd-5sis* in a nitrogen atmosphere.



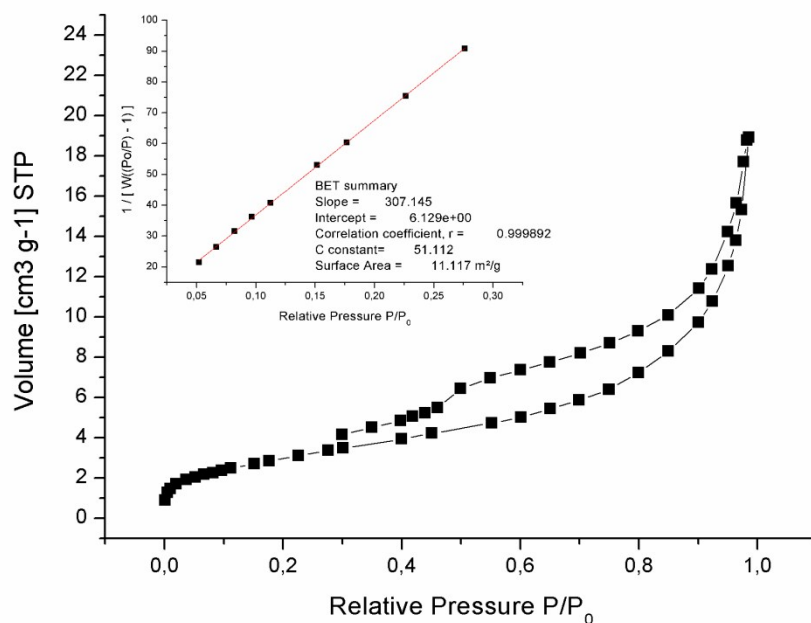
**Fig.S6.** Effect of stirring speed of the system on the glycerol conversion. Reaction conditions: 12,61 g glycerol, 8,225 g urea, 140°C, 10 KPa.



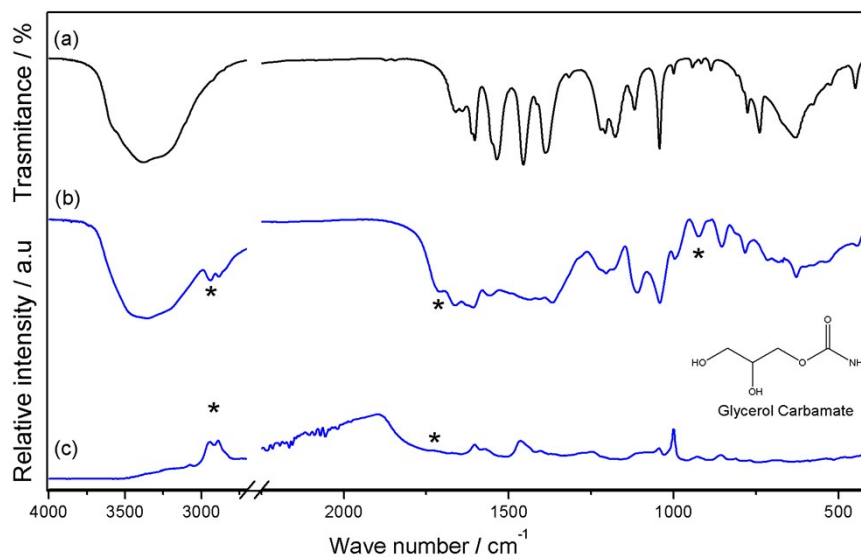
**Fig.S7.** Effect of *Nd-5sis* amount on the glycerol conversion. Reaction conditions: 12,61 g glycerol, 8,225 g urea, 1,5 h, 140°C, 10 KPa.



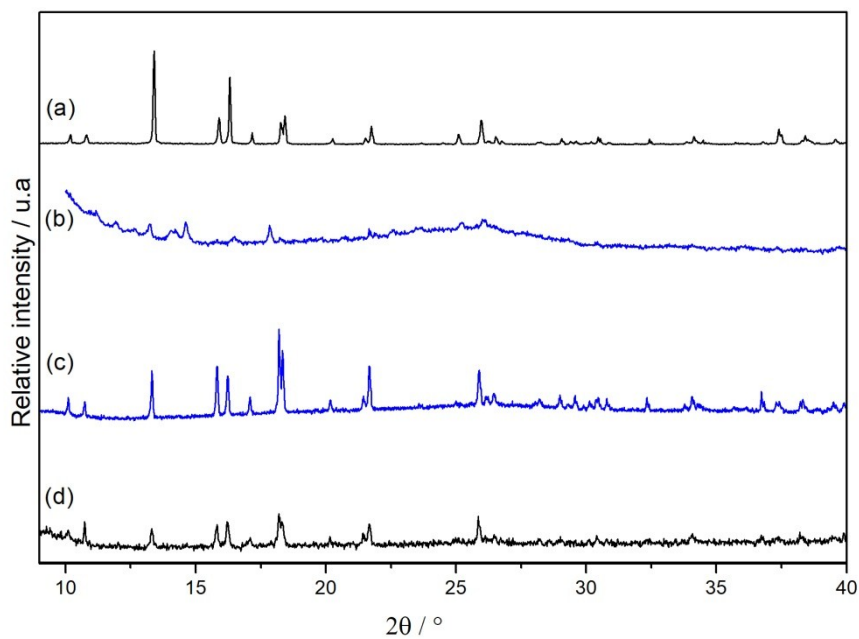
**Fig.S8.**  $^{13}\text{C}$  NMR (400 MHz, in deuterated acetone) spectrum of the reaction. The system is principally formed by glycerol, glycerol carbonate and residual urea.



**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.