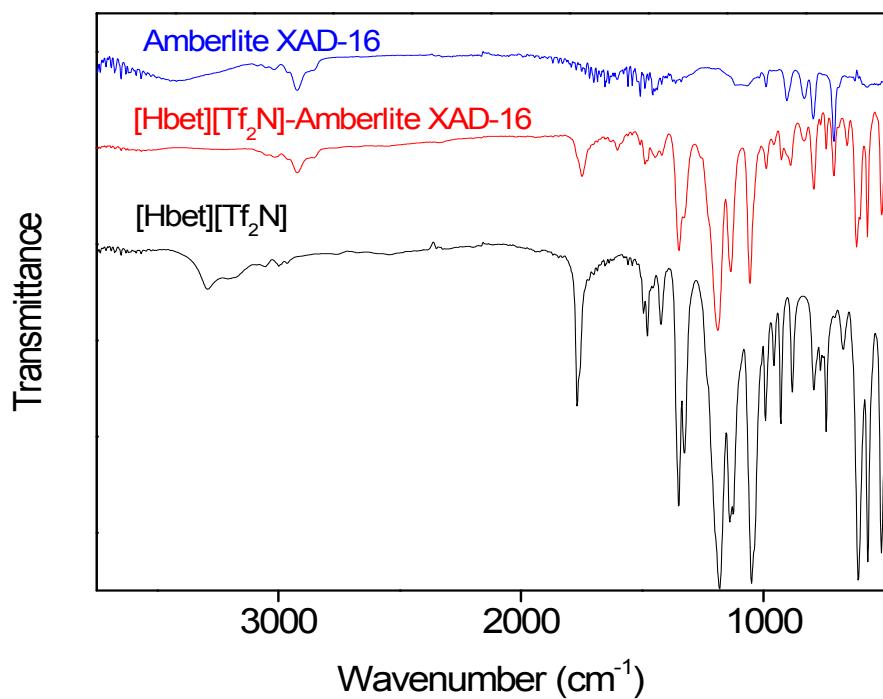


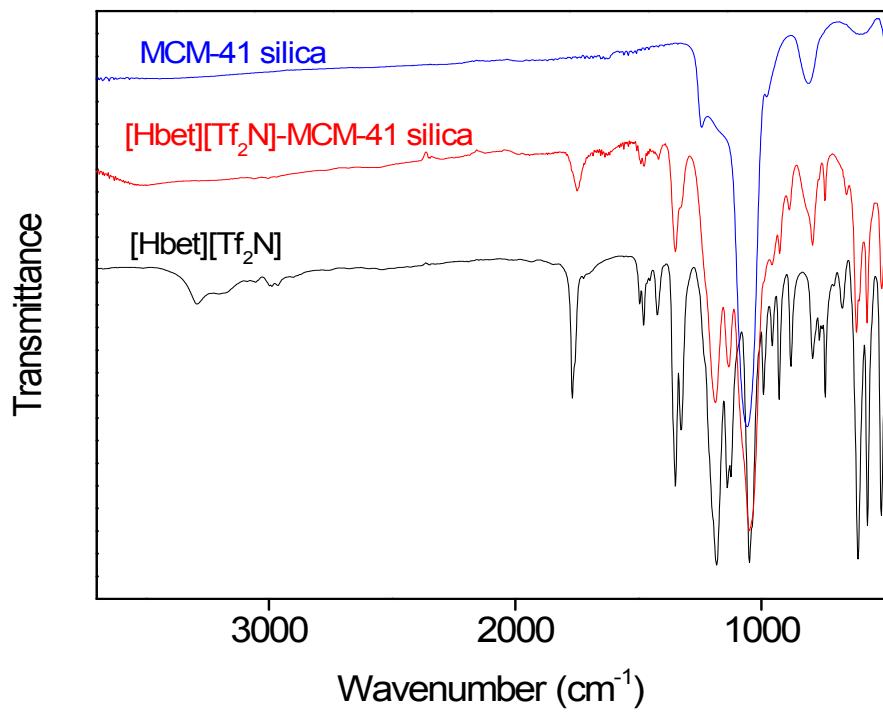
Electronic Supporting Information (ESI)

**Recovery of scandium(III) from diluted aqueous solutions by a  
supported ionic liquid phase (SILP)**

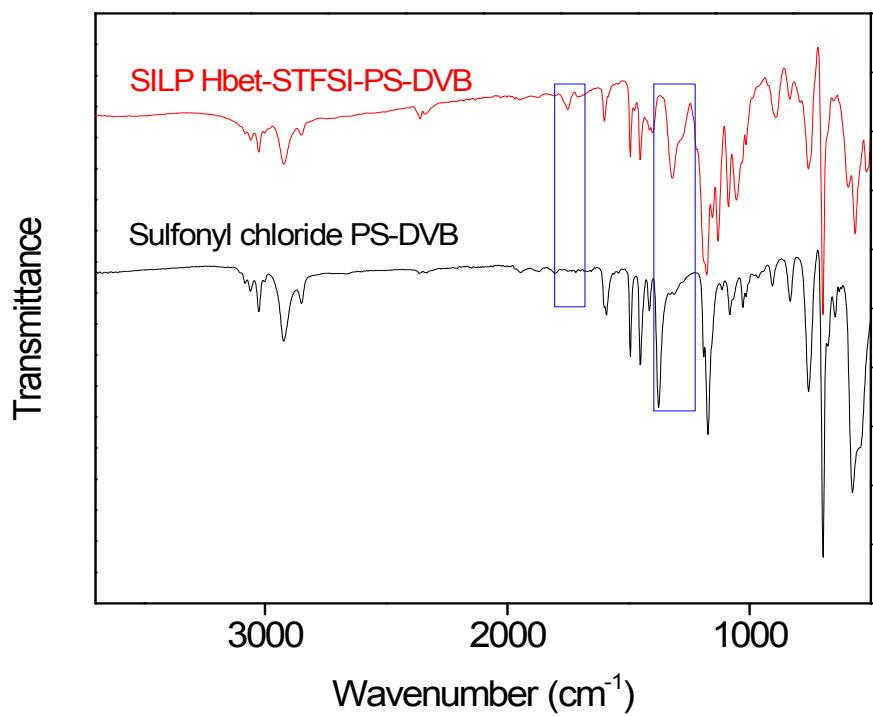
**Dženita Avdibegović,<sup>a</sup> Mercedes Regadío,<sup>a</sup> Koen Binnemans<sup>a</sup> \***



**Figure S1** FT-IR spectra of [Hbet][Tf<sub>2</sub>N] and SILP prepared by dry impregnation method with [Hbet][Tf<sub>2</sub>N] and the Amberlite XAD-16 support.



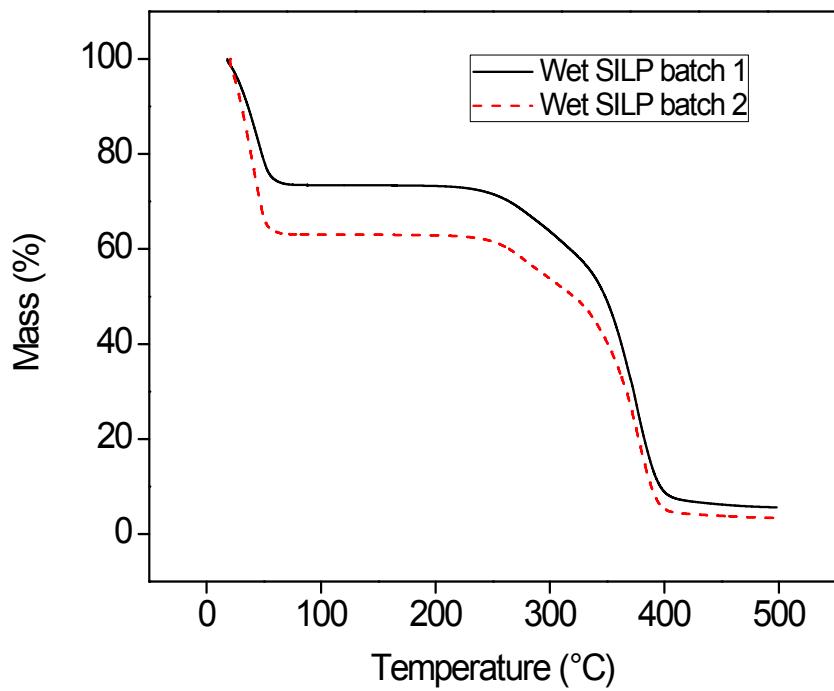
**Figure S2** FT-IR of [Hbet][Tf<sub>2</sub>N] and SILP prepared by dry impregnation method with [Hbet][Tf<sub>2</sub>N] and MCM-41 silica support.



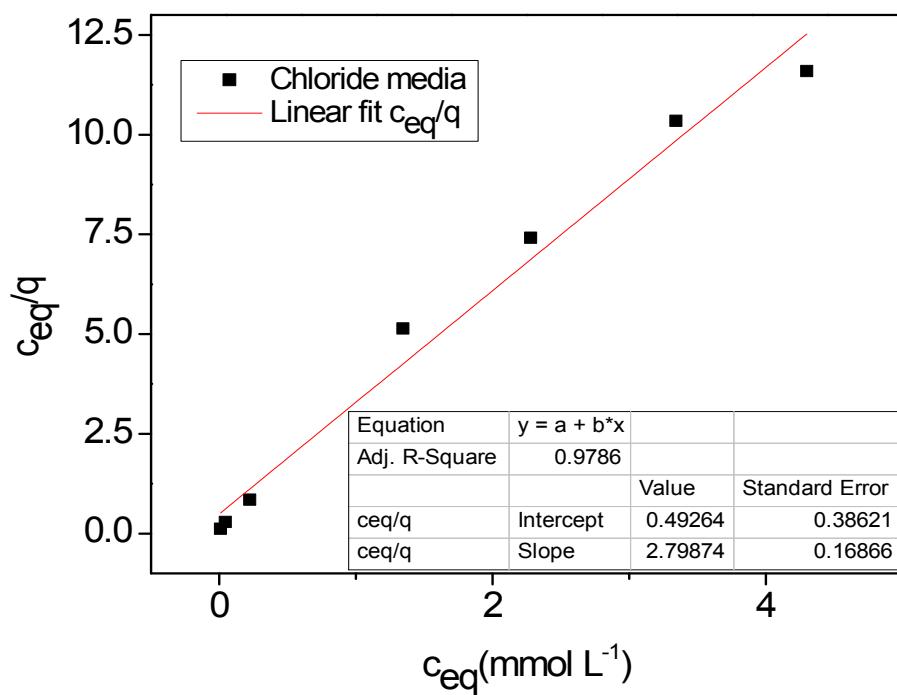
**Figure S3** FT-IR spectra of the SILP Hbet-STFSI-PS-DVB and sulfonyl chloride resin. The most characteristic peaks are emphasized by blue rectangles.

**Table S1** Characteristic wavenumbers for the transitions in the FT-IR spectra of the sulfonyl chloride resin and the SILP Hbet-STFSI-PS-DVB

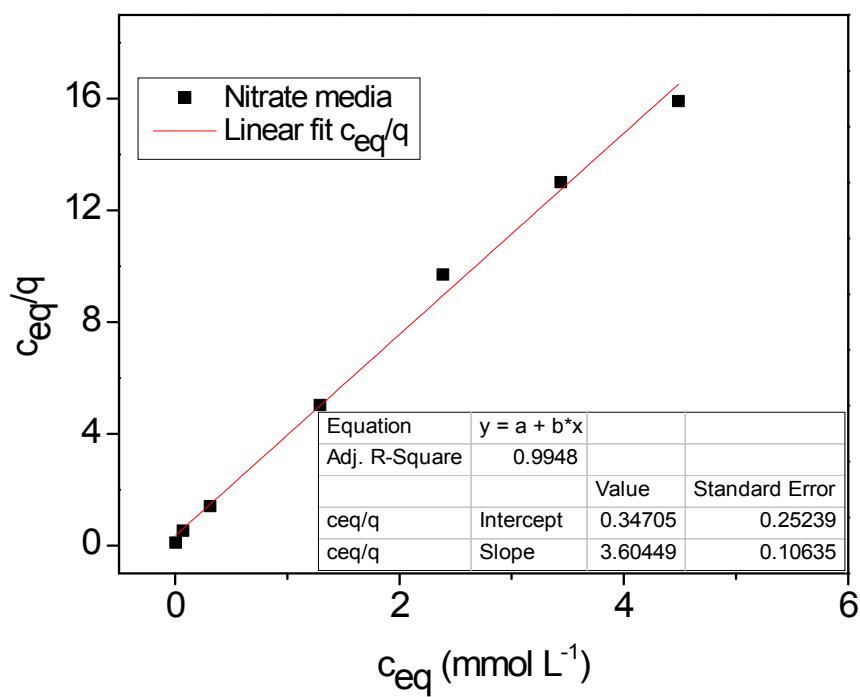
<b>Vibrational modes</b>	<b>Wavenumber (cm<sup>-1</sup>)</b>	
	<b>Resin</b>	<b>SILP</b>
w, C-H aromatic stretching	3026	3026
s, C-H asymmetric stretching	2923	2923
s, C=O asymmetric stretching	-	1750
s, C-C aromatic stretching	1592, 1492, 1451	1600, 1493, 1451
s, S=O asymmetric stretching	1414, 1375	1400, 1319
s, S=O symmetric stretching	1173	1177, 1154, 1130
m, C-H aromatic bending	1082, 1028	1087
s, S-N-S stretching	-	1054
C-H bending out-of-plane	906, 833, 757, 697	892, 834, 758, 697
s, C-S stretching	576	564
s, C-F bending	-	517



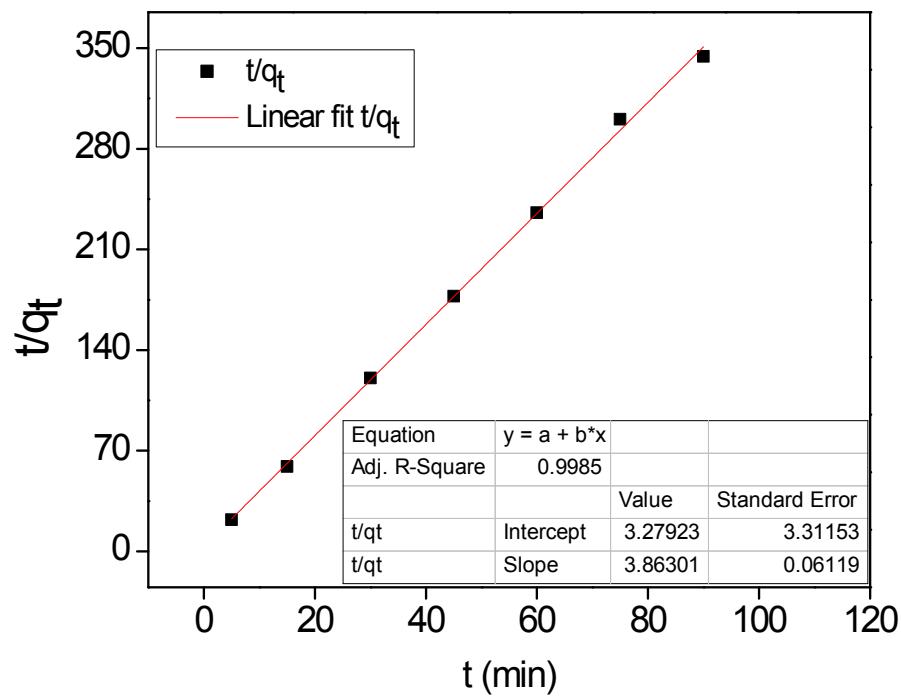
**Figure S4** TGA of the wet SILP Hbet-STFSI-PS-DVB in two different batches. Nitrogen atmosphere, heating rate:  $5 \text{ }^{\circ}\text{C} \cdot \text{min}^{-1}$ , from 20 to  $500 \text{ }^{\circ}\text{C}$ .



**Figure S5** Langmuir adsorption isotherm for uptake of Sc(III) from chloride media at room temperature.



**Figure S6** Langmuir adsorption isotherm for uptake of Sc(III) from nitrate media at room temperature.



**Table S2** Wilcoxon's statistical test for comparison between  $q$  value in each cycle and the mean  $q$  value.<sup>1</sup>

Cycle	$q$ (mmol g <sup>-1</sup> )	Deviations from the mean value (0.18 mmol g <sup>-1</sup> )·10 <sup>-2</sup>	Deviations in ascending order of absolute values, keeping the signs
1	0.18	0.2	0
2	0.17	0.5	1
3	0.20	1.0	2
4	0.18	-1.4	-3
5	0.15	1.5	4
6	0.19	1.7	5
7	0.19	-3.4	-6
SUM(-)	9	$W = \min[\text{SUM}(-), \text{SUM}(+)] = 9$	
SUM(+)	12		

For Wilcoxon's two tailed test the critical value of  $W$  at  $p = 0.05$  and  $N = 7$  is 2.<sup>2</sup>

$9 > 2$ ,  $W > W(0.05, 7)$ ,  $H_0$  is accepted, there is no significant difference between experimental values and the mean value of the data set.

## References

- [1] P. Coletti, *Advanced statistics* [Internet], **2010**, [cited 2017 March 10]. Available from: <http://www.paolocoletti.it/books/AdvancedStatistics.pdf>
- [2] F. Sani, J. Todman, *Experimental Design and Statistics for Psychology: A First Course*, Wiley-Blackwell, **2005**.