Electronic Supplementary Information for

Supramolecular Ionogels Prepared with Bis(amino alcohol)oxamides as Gelators: Ionic Transport and Mechanical Properties

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Preparation of ionogels

For each combination of gelator-IL which produced ionogels, a series of gel samples was prepared with gelator concentration ranging from the MGC to 3.0 wt%, see Table S1.

Table S1. Gelator concentrations (wt%) used in preparation of ionogels from various gelator-IL combinations.

IL / Gelator	**$[C_4mim][BF_4]$**	**$[C_4mPyr][N(Tf)_2]$**	**$[C_4mim][N(Tf)_2]$**
Gelator **1**	**Combination 1** IONOGEL Gelator wt%: 0.7 (MGC*), 0.8, 1.0, 1.6, 2.4, 3.2, 4.0, 4.7, 5.5	**Combination 2** IONOGEL Gelator wt%: 0.5 (MGC*), 0.7, 1.0, 2.0, 3.0	Combination 3 no gelation
Gelator **2**	Combination 4 IONOGEL** long gelation time	**Combination 5** IONOGEL Gelator wt%: 0.2 (MGC*), 0.3, 0.4, 0.5, 0.7, 1.0, 2.0, 3.0	**Combination 6** IONOGEL Gelator wt%: 0.3 (MGC*), 0.4, 0.5, 0.7, 1.0, 2.0, 3.0
Gelator **3**	**Combination 7** IONOGEL Gelator wt%: 1.7 (MGC*), 1.8, 1.9, 2.0, 3.0	**Combination 8** IONOGEL Gelator wt%: 0.7 (MGC*), 1.0, 3.0	**Combination 9** IONOGEL Gelator wt%: 0.7 (MGC*), 3.0
Gelator **4**	Combination 10 IONOGEL** long gelation time	Combination 11 no gelation	Combination 12 no gelation

*MGC – minimum gelator concentration

** For combinations 4 and 10 the formation of a stable ionogel was observed after approximately 12 hours of leaving the solution in rest at room temperature. These systems were not further studied.

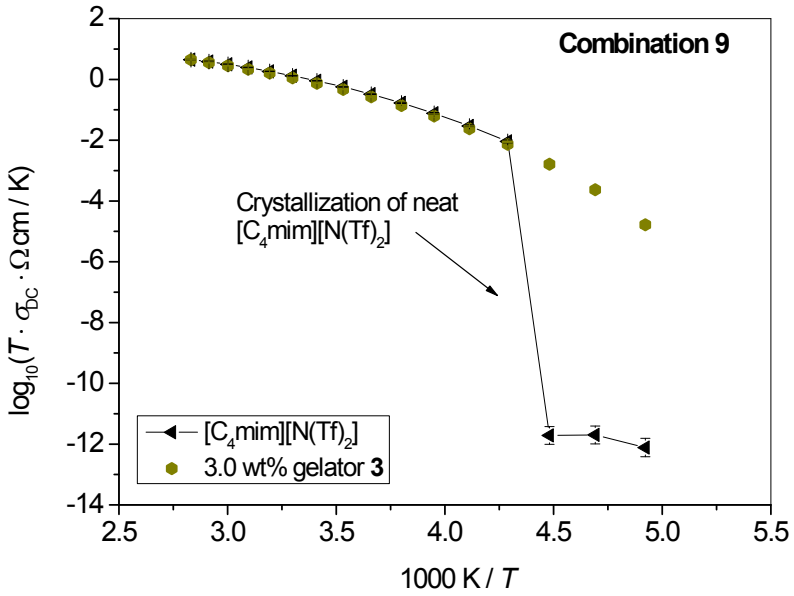

Figure S1: Ionic conductivity as a function of reciprocal temperature for neat $[C_4mim][N(Tf)_2]$ and ionogel of combination 9 with 3.0 wt% of gelator **3**. The line connecting the data for $[C_4mim][N(Tf)_2]$ is a guide to the eye. The error bars are at most of the order of the symbol size.

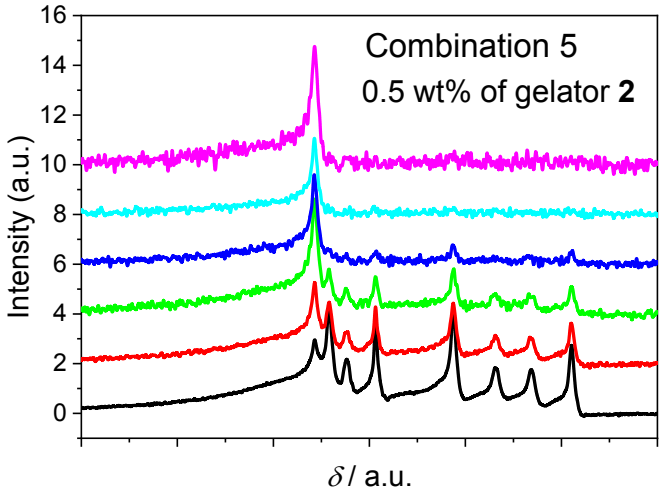

Figure S2: Exemplary spectra of the PFG-NMR diffusion measurement (combination 5 at 0.5 wt% gelator), gradient strength increasing from bottom to top (it is $g/(T/m)$ = 12.6, 13.2, 13.9, 14.5, 15.2 and 15.8, respectively). The intensity is in arbitrary units with a scale differing for different g, and the baseline shifted for clarity. With increasing g the cation resonances decay due to fast diffusion, while the gelator resonance is less reduced. In the spectrum on top at highest g, only the residual peak of the gelator is remaining, indicating far slower diffusion than for the cation.

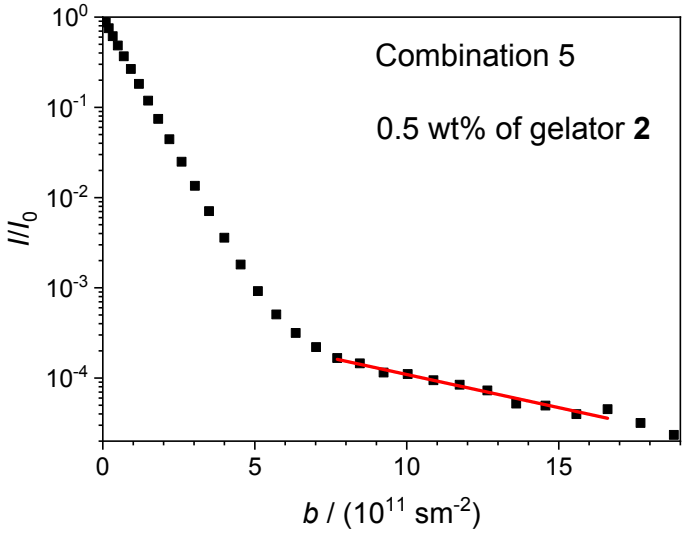

Figure S3: Exemplary echo decay data (combination 5 at 0.5 wt% gelator). The initial decay is due to the decay of the cation signal, the second decay is due to the decay of the gelator signal. The red line shows the fit for the diffusion of the gelator, resulting in $D_{Gelator}$ = 1.7·10^{-12} m^2 s^{-1}.

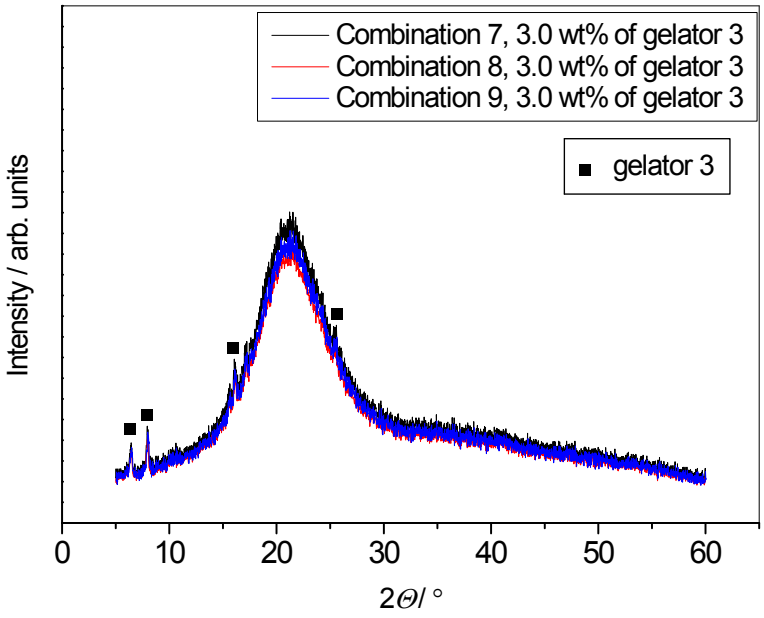

Figure S4: X-ray diffraction patterns for ionogels from combinations 7, 8 and 9 with 3.0 wt% of gelator **3**. Note that the small diffraction peaks correspond to the crystalline gelator **3** (compare with Figure S5).

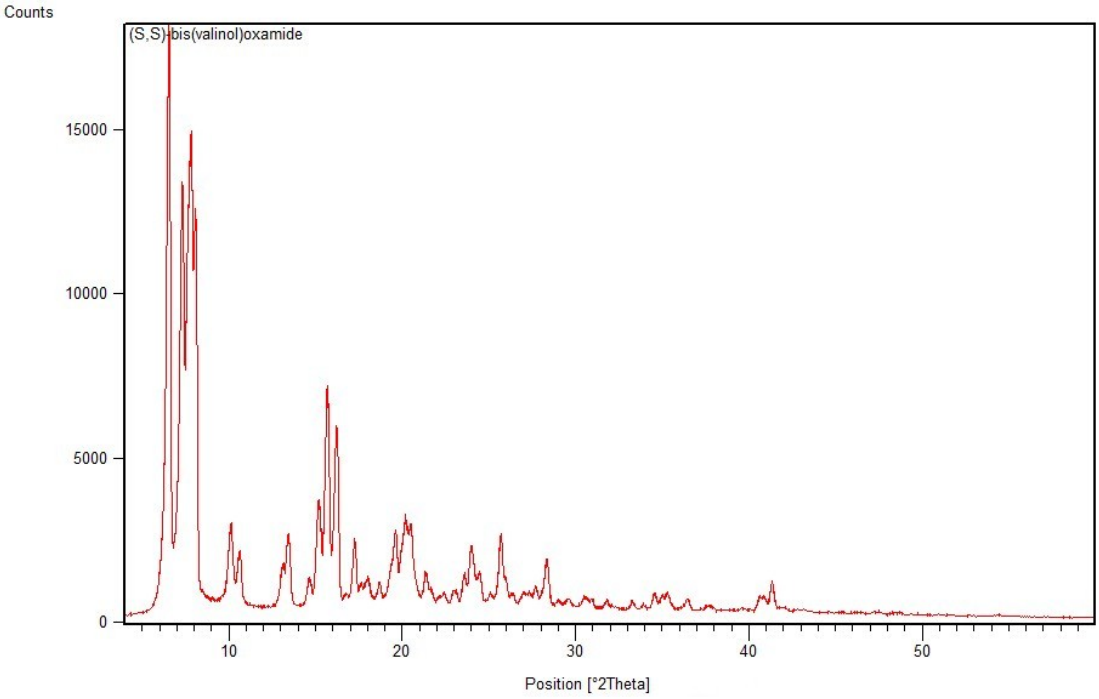

Figure S5: X-ray diffraction pattern for microcrystalline powder of gelator **3**.