Supplementary information

One–pot Route To Class II Hybrid Ionogels Electrolytes for DSSC Application

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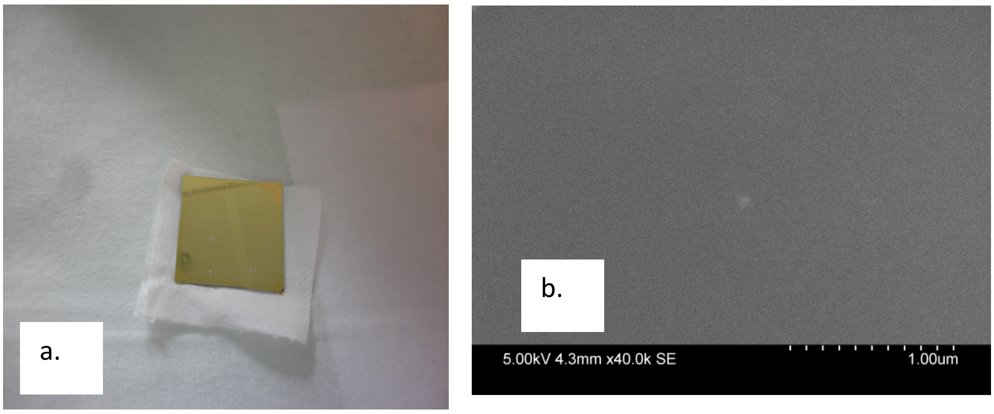
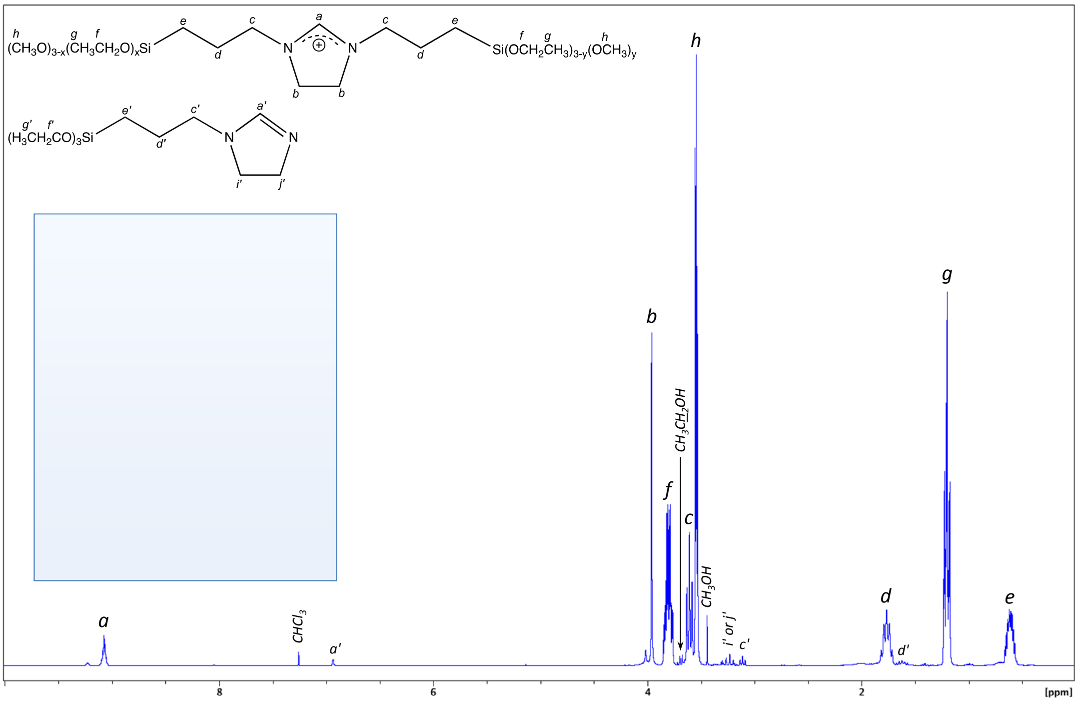


Figure S1. a) Photograph of Si–IL based films onto Pt–Silicon substrates, b) SEM images of the surface of the Si–IL3 based hybrid films. No phase separation was observed at the scale of the observation.

^{1}H NMR of LI / $CDCl_3$ (diluted)



^{13}C NMR of LI / $CDCl_3$ (concentrated)

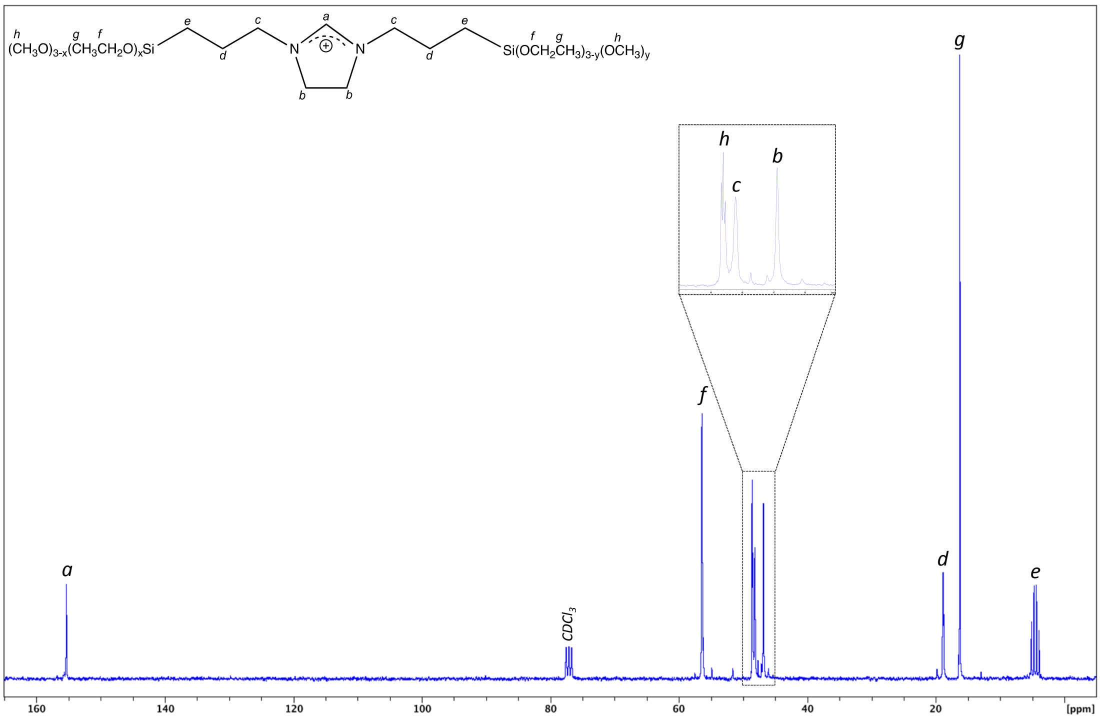


Figure S2. Structure of the 1,3−di(3−propyltrimethoxysilane) imidazolium iodie detremined through a) 1H NMR and b) 13 C NMR spectroscopy.

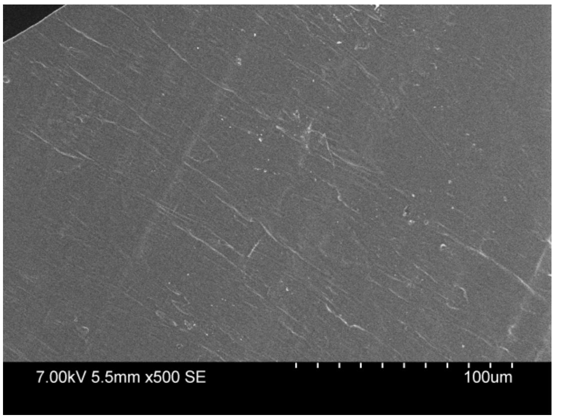


Figure S3. FEG−SEM images of A:B:50:50 Si−IL xerogels

DAB (Debye-Anderson-Brumberger) Model

This model is suitable to analyse the scattering from a randomly distributed, two-phase system based. The two-phase system is characterized by a single length scale, the correlation length, which is a measure of the average spacing between both regions. The model also assumes an exponential and isotropic decay of the electron-density correlation. The scattering density can be written as follows:

$$I(q) = \frac{A}{(1+(q\cdot\Lambda)^2)^2} + B$$

with A a scaling constant depending from the system, Λ the correlation length and B a background constant.

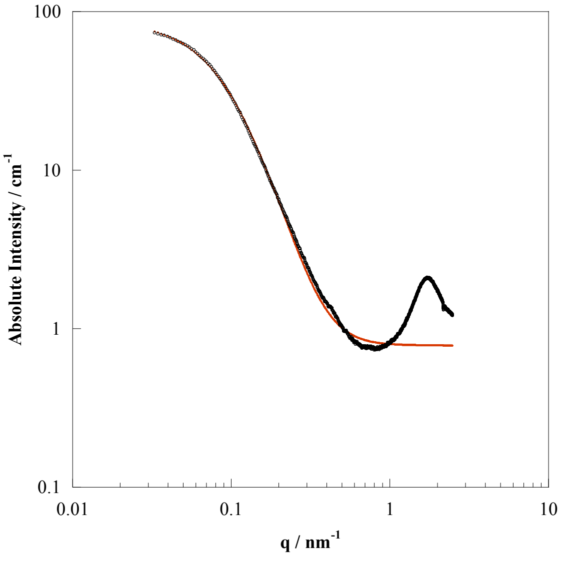


Figure S4. Adjustment of Debye−Anderson-Brumberger scattering model (red line) on the low-q part of the small angle scattering spectrum of a hybrid ionogel with 20 wt.% of B. The correlation length in the fit is 8.2 nm.

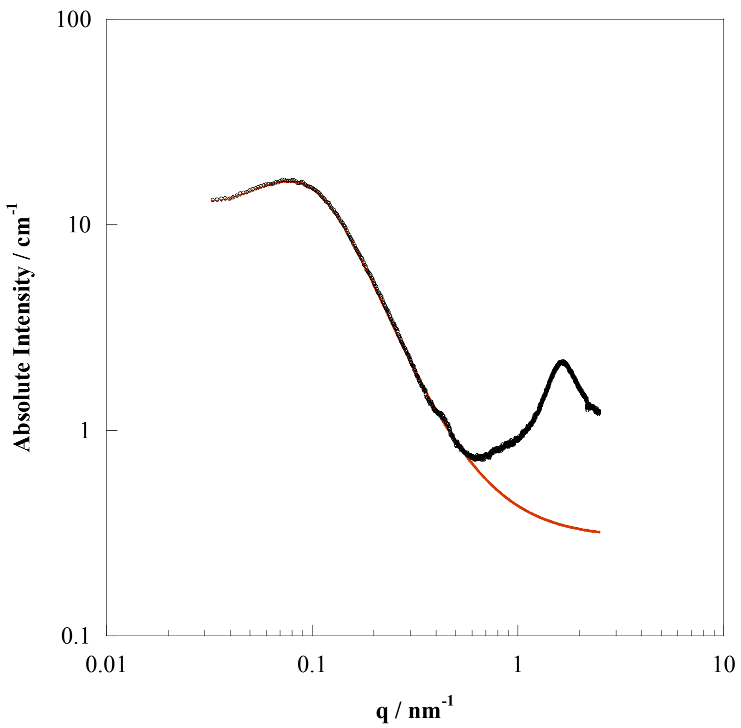


Figure S5. Adjustment of Broad Peak Model scattering model (red line) on the low-q part of the small angle scattering spectrum of a hybrid ionogel with 30 wt.% of B. The correlation length in the fit is 0.11 nm.

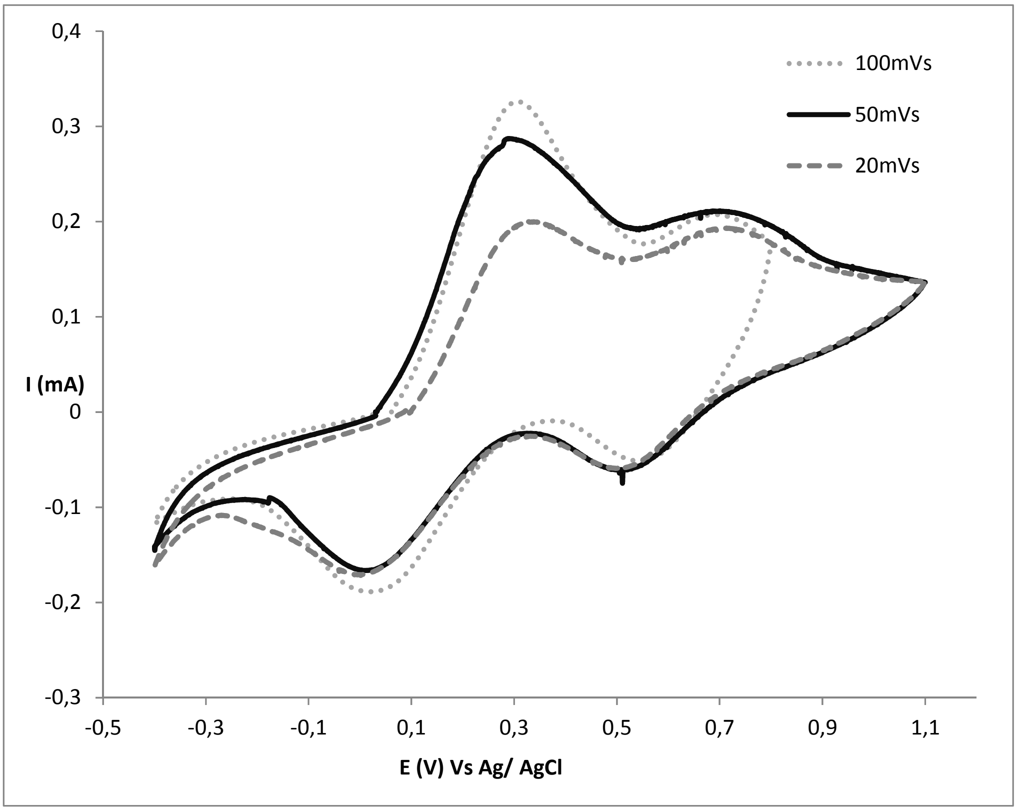


Figure S6. CVs obtained for Si–IL 3 based hybrid films at 20, 50 and 100 $mV.s^{-1}$

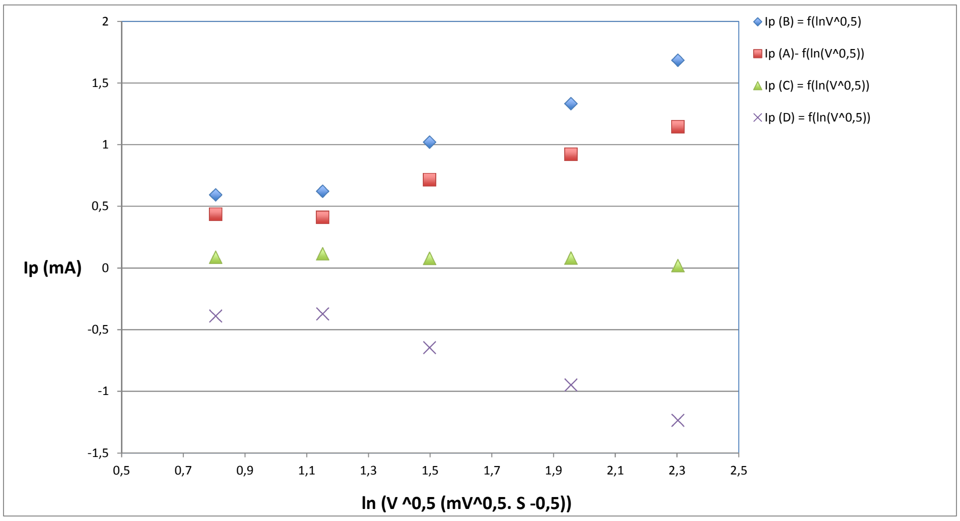


Figure S7. Evolution of Ip as function of Ln(scanrate)1/2 for Si-IL ionogels with 25 % in wt. of solution B.

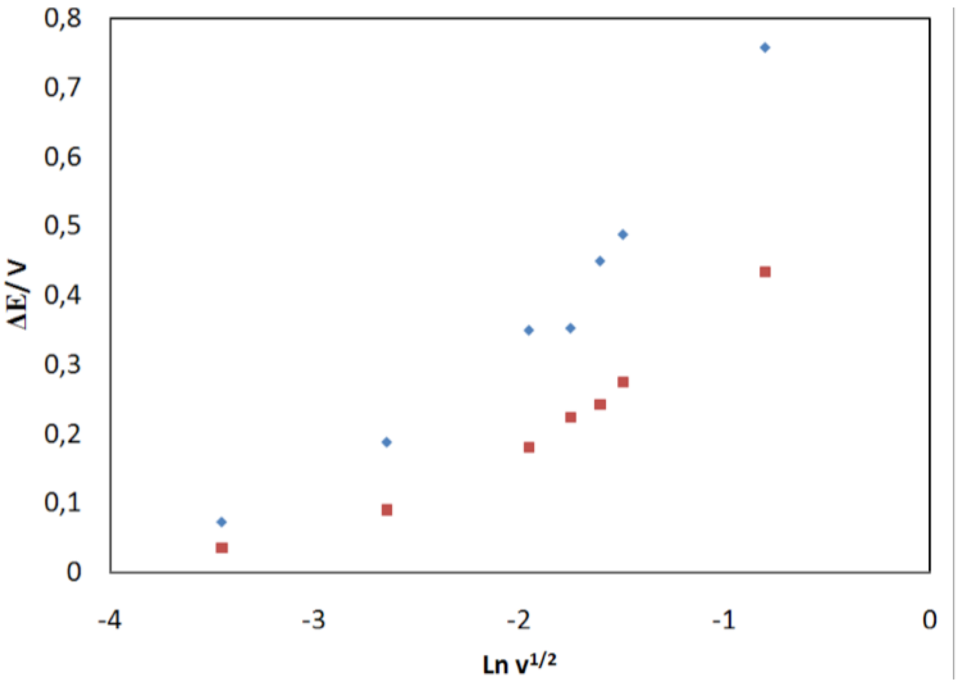


Figure S8. Peak−to−peak separation as function of the Si−IL hybrid films.

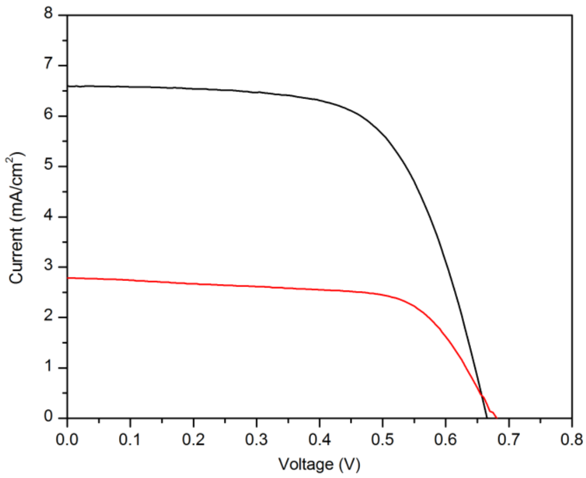


Figure S9. DSSCs reference cells (black), DSSCs containing Si−IL electrolyte (red)