

Electronic Supplementary Information (ESI)

PFG diffusion measurements: ^7Li , ^1H , ^{19}F

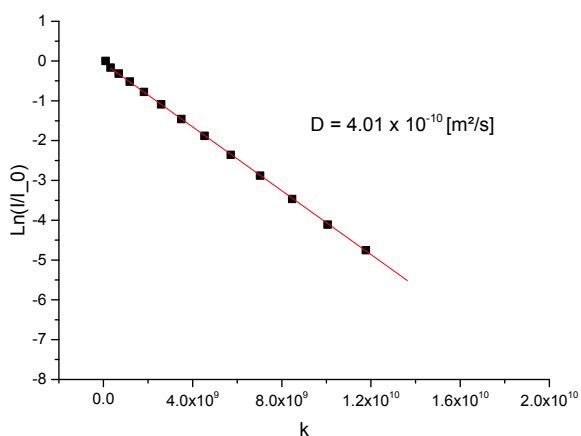


Fig. S1: ^1H Diffusion NMR experiment of the electrolyte mixture without separator.

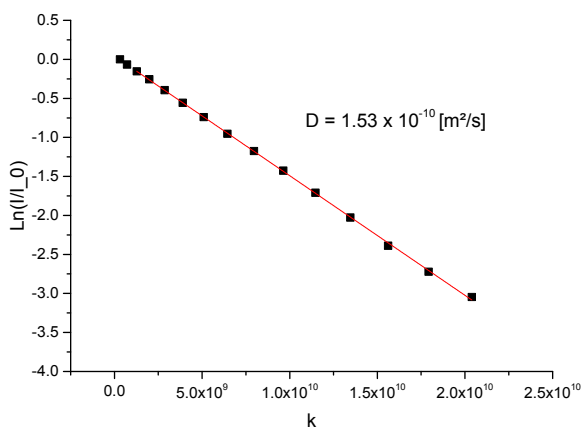


Fig. S2: ^7Li Diffusion NMR experiment of the electrolyte mixture without separator.

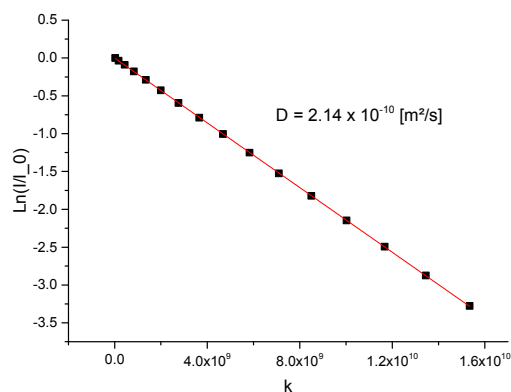


Fig. S3: ^{19}F Diffusion NMR experiment of the electrolyte mixture without separator.

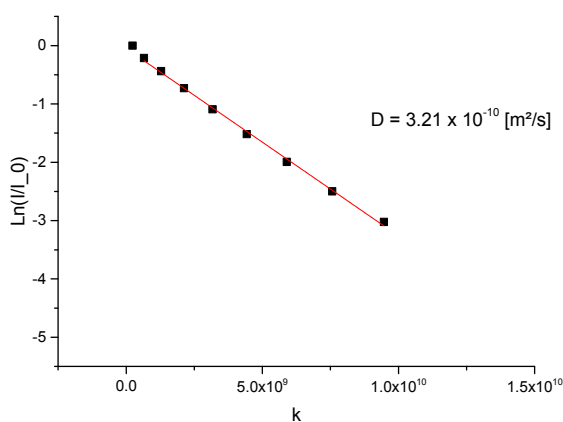


Fig. S4: ^1H Diffusion NMR experiment of electrolyte mixture soaked within Whatman[®] GF/D separators.

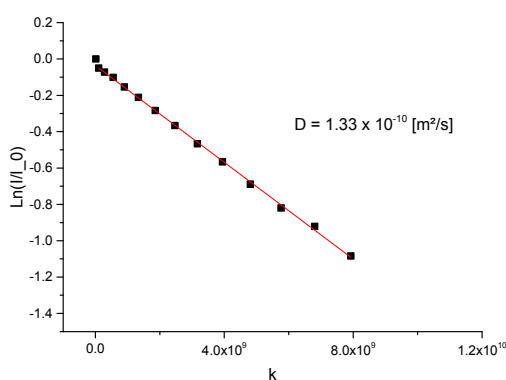


Fig. S5: ^7Li Diffusion NMR experiment of the electrolyte mixture soaked within Whatman[®] GF/D separators.

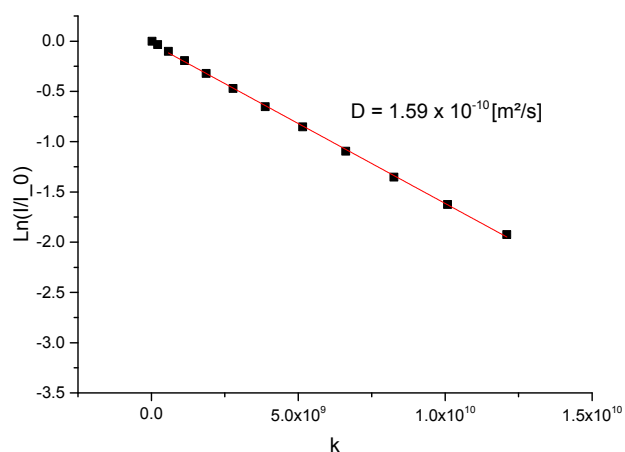


Fig. S6: ^{19}F Diffusion NMR experiment of electrolyte mixture soaked within the Whatman® GF/D separator stack.

Table S1: Overview of the free diffusion constants of 1M LiDFOB in EC/DEC (3:7) + 10 wt% FEC electrolyte mixture; pure and soaked in the glass fiber separator separator measured with diffusion NMR experiments (see Figures 8-13).

	^1H	^7Li	^{19}F
Electrolyte pure	$4.01 \times 10^{-10} \pm 1.22 \times 10^{-12}$	$1.53 \times 10^{-10} \pm 7.98 \times 10^{-13}$	$2.14 \times 10^{-10} \pm 2.12 \times 10^{-13}$
Electrolyte in separator	$3.21 \times 10^{-10} \pm 5.58 \times 10^{-12}$	$1.33 \times 10^{-10} \pm 1.12 \times 10^{-12}$	$1.59 \times 10^{-10} \pm 1.25 \times 10^{-12}$

1D MR Imaging pulse sequence

;cnst2: y-gradient maximum amplitude

;cnst3: z-gradient maximum amplitude

;diffprof

;\$OWNER=nmrsl

#include<Avance.incl>

#include<Grad.incl>

#include<De.incl>

"cnst31=cnst1+cnst2+cnst3"

"p2 = 2*p1"

"p3 = 3*p1"

"p4 = p1*cnst5"

```

1    ze
      10u pl1:f1
      d11 UNBLKGRAMP
2    d1                ;relaxation delay
      p4:f1 ph1        ;non-selective pulse
      d2 grad{(cnst1) | (cnst2) | (cnst3)}
      d18
      d2 groff
      d9
      p1:f1 ph2
      0.3u
      p3:f1 ph3
      d9
      d2 grad{(cnst1) | (cnst2) | (cnst3)}
      ACQ_START(ph30,ph31)
      aq DWELL_GEN:f1    ; start acquisition
      d2 groff
      100u
      rcyc=2
      100u
      100u wr #0
      exit

```

ph1 = 0 2 1 3 2 0 3 1

ph2 = 0

ph3 = 2

ph30 = 0

ph31 = 0 2 3 1 2 0 1 3

;pl1: f1 channel - power level for pulse (default)

;p1: f1 channel - 90 degree pulse

;d2: gradient stabilisation time

;d9: to increase the echo time

;d18: dephasing time

;cnst1: x-gradient maximum amplitude