Supplemental information:

Table S1. Experimental details of the preparation of the di-ureasil ormolytes.

	Jeffamine ED-600 mass (g)	Jeffamine ED-900 mass (g)	ICPTES Volume (μL)	Ethanol Volume (μL)	Water Volume (μL)	Doping agents (g)	
						$LiBF_4$	[Bmim]Cl
d-U(600)∞	1.021		849.97	803.67	91.85		
d-U(600)[Bmim]Cl	1.014		844.31	798.31	91.23		0.1012
d-U(600)$LiBF_4$-[Bmim]Cl	1.022		851.72	805.32	92.03	0.0689	0.1046
d-U(900)∞		1.001	556.31	457.39	60.11		
d-U(900)[Bmim]Cl		1.004	557.65	458.49	60.26		0.1015
d-U(900)$LiBF_4$-[Bmim]Cl		1.026	579.76	468.44	61.57	0.0672	0.1033

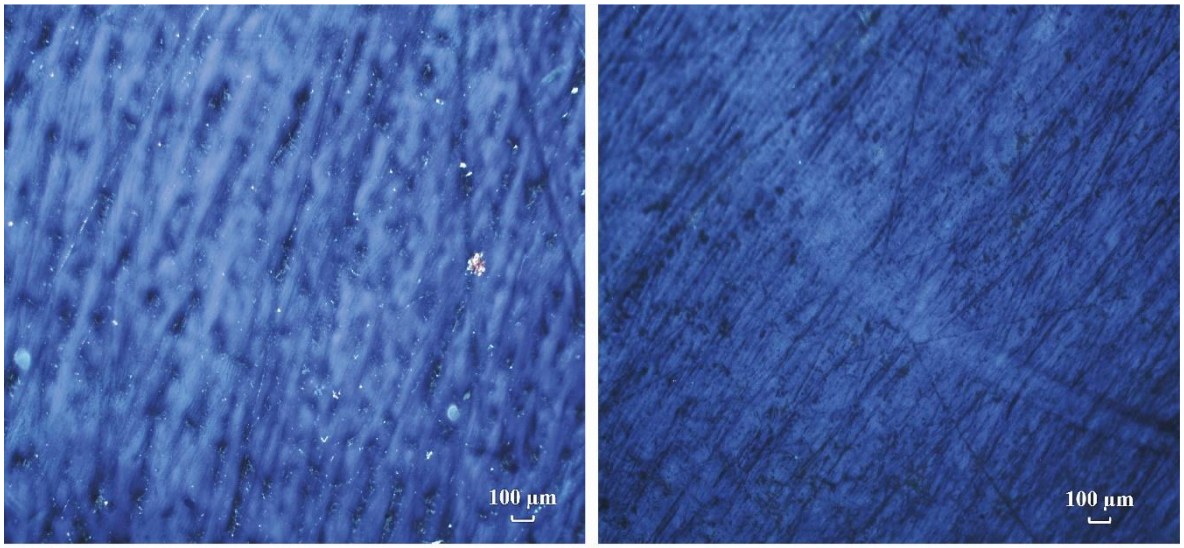

Figure S1. POM (crossed polarizers) images of d-U(600)$LiBF_4$-[Bmim]Cl (**a**) and d-U(900)$LiBF_4$-[Bmim]Cl

Table S2. AFM roughness values of the d-U(600) and d-U(900)-based di-ureasil ormolytes.

Sample	Average roughness (Ra; nm)	RMS roughness (Rq; nm)
d-U(600)∞	9.5	15.71
d-U(600)$LiBF_4$-[Bmim]Cl	40.32	51.93
d-U(900)∞	12.02	16.04
d-U(900)$LiBF_4$-[Bmim]Cl	4.15	5.64

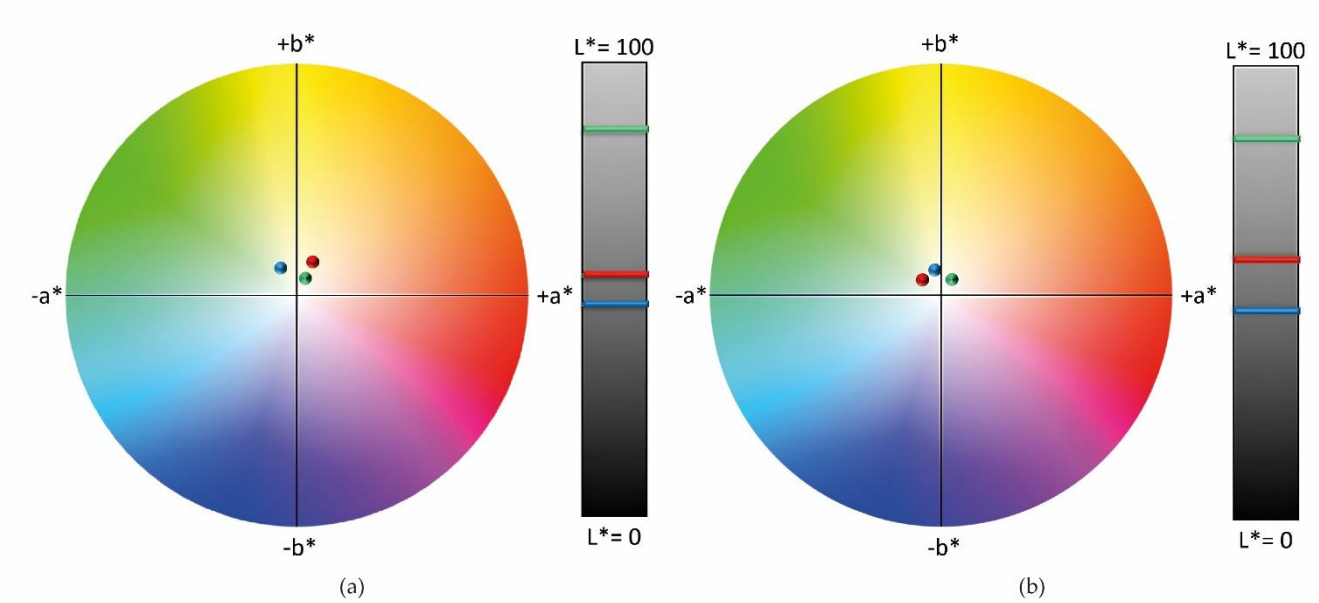

Figure S2. 1976 CIE L*a*b* color diagrams of the ECD1 (a) and ECD2 (b). The green, red and blue colors correspond to the values after applying a voltage of ±2.0 V, ±2.5 V and ±3.0 V, on the ECDs.

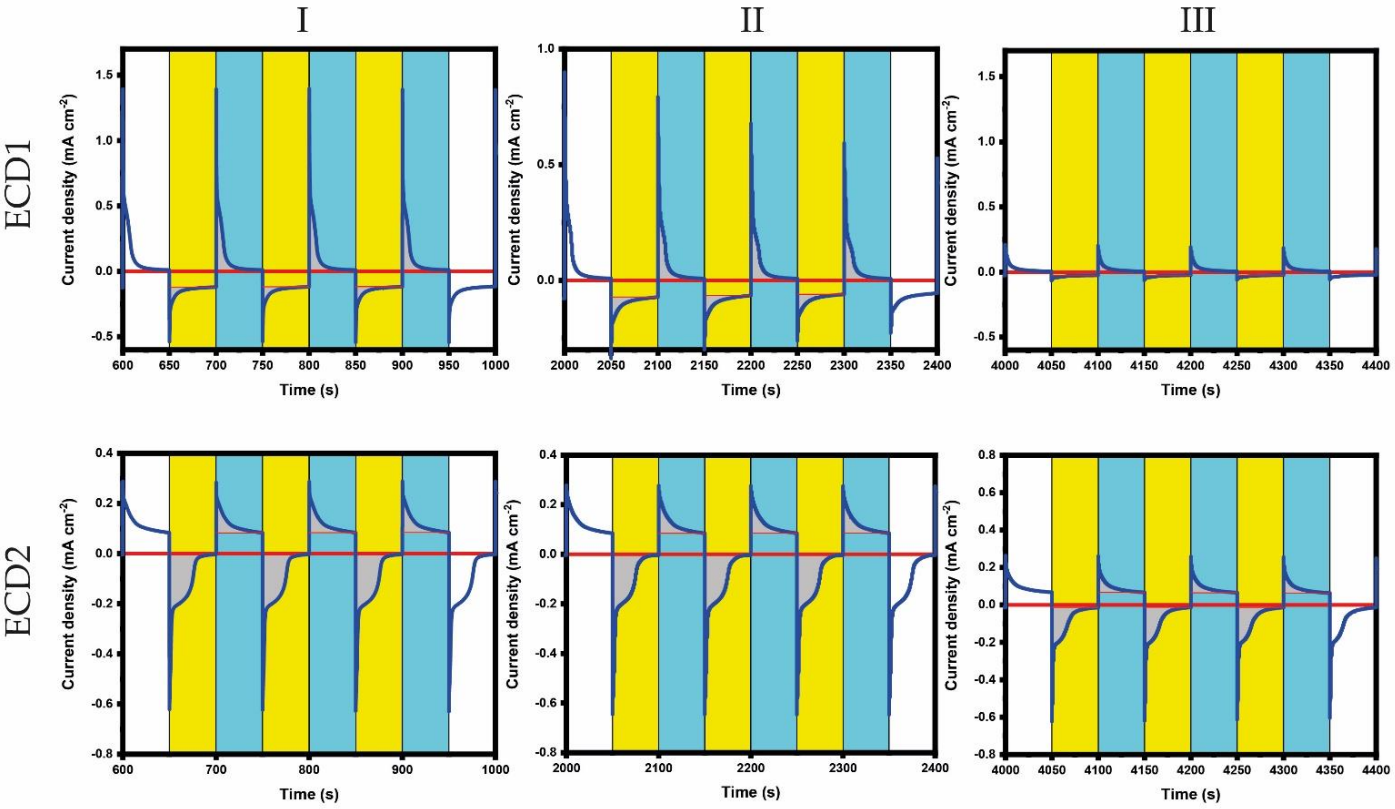

Figure S3. Time intervals (s) at which the CE values were measured and calculated. The yellow is for the inserted charge and the blue is for the de-sinserted charge.

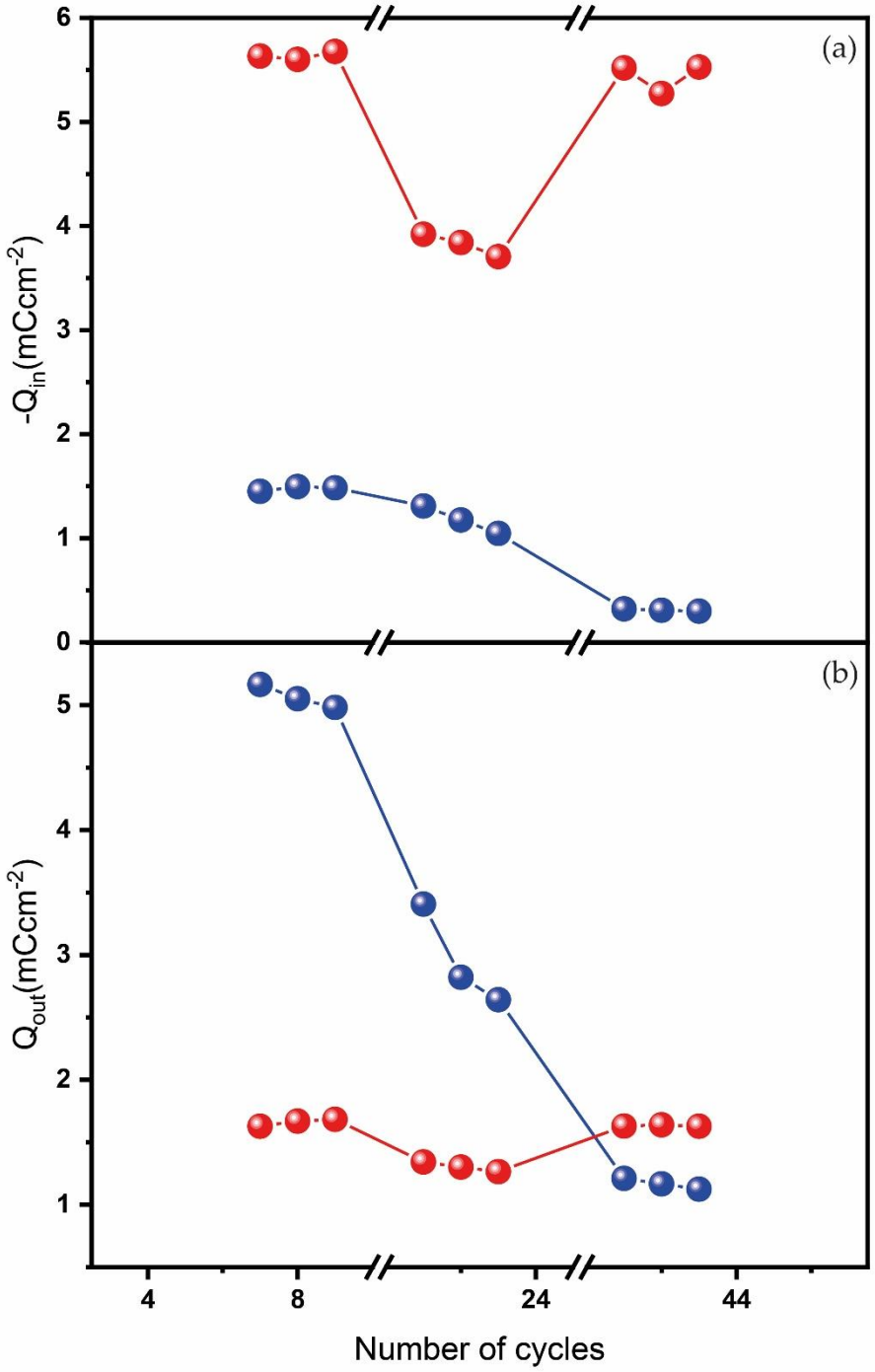

Figure S4. Inserted ($-Q_{in}$) (a) and de-inserted (Q_{out}) (b) charge density as function of the number of cycles for ECD1 (red symbols) and ECD2 (blue symbols).