

Electronic Supplementary Information (ESI)

Easy approach to synthesize N/P/K co-doped porous carbon microfibers from cane molasses as a high performance supercapacitor electrode material

Alfin Kurniawan[†], L. K. Ong[†], Fredi Kurniawan[†], C. X. Lin[‡], Felycia E. Soetaredjo[†], X. S.

Zhao^{‡,*}, Suryadi Ismadji^{†,*}

[†] Department of Chemical Engineering, Widya Mandala Surabaya Catholic University,
Kalijudan 37, Surabaya 60114, Indonesia

[‡] Australian Institute for Bioengineering and Nanotechnology, The University of
Queensland, Brisbane, QLD 4072, Australia

* E-mail: george.zhao@uq.edu.au; suryadiismadji@yahoo.com

Number of pages (including cover sheet): 5

Number of Supplementary Tables: 2

Number of Supplementary Figures: 2

Table S1. Molecular structures and some relevant properties of electrolyte solutions used in this study

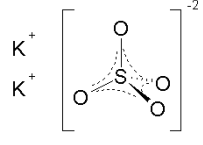
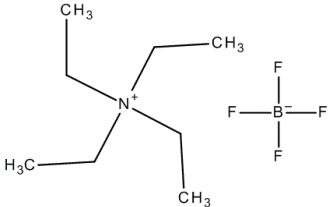
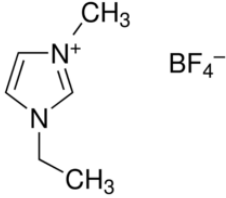
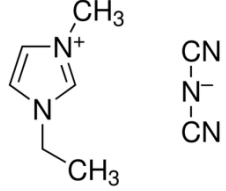
Electrolytes	Molecular Structure	Molecular Weight (g mol ⁻¹)	Cation	Anion	Ionic Conductivity (mS cm ⁻¹)	Viscosity @ 25 °C (mPa s or cP)
K ₂ SO ₄		174.26	K ⁺	SO ₄ ²⁻	73.8	1.09
TEABF ₄		217.06	[TEA] ⁺	[BF ₄] ⁻	57.4	9.41
TEABF ₄ /ACN					63.0	1.73
EMIBF ₄		197.97	[EMI] ⁺	[BF ₄] ⁻	13.8	38.6
EMIBF ₄ /ACN					62.3	1.62
EMIDCA		177.21	[EMI] ⁺	[DCA] ⁻	27.2	18.7
EMIDCA/ACN					67.1	1.68

Table S2. XRD crystallite parameters of CMFs series obtained at various carbonization temperatures

Samples	2θ (002) / °	d_{002} / nm	L_a (nm)	L_c (nm)	L_c/d_{002}
CMF-773.15	25.21	0.353	1.53	0.97	2.75
CMF-873.15	25.28	0.352	1.62	0.99	2.81
CMF-973.15	25.43	0.350	1.75	1.02	2.91
CMF-1073.15	25.50	0.349	1.84	1.05	3.01
CMF-1173.15	25.65	0.347	1.91	1.07	3.08

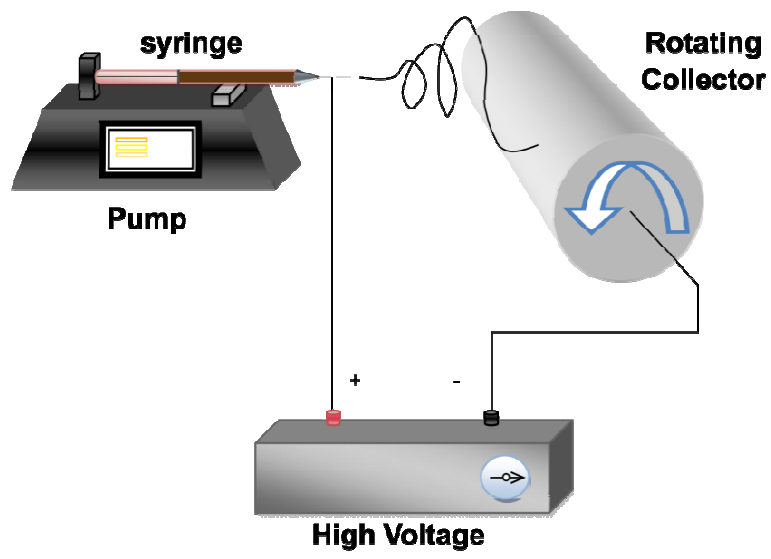


Fig. S1 Schematic diagram of electrospinning apparatus

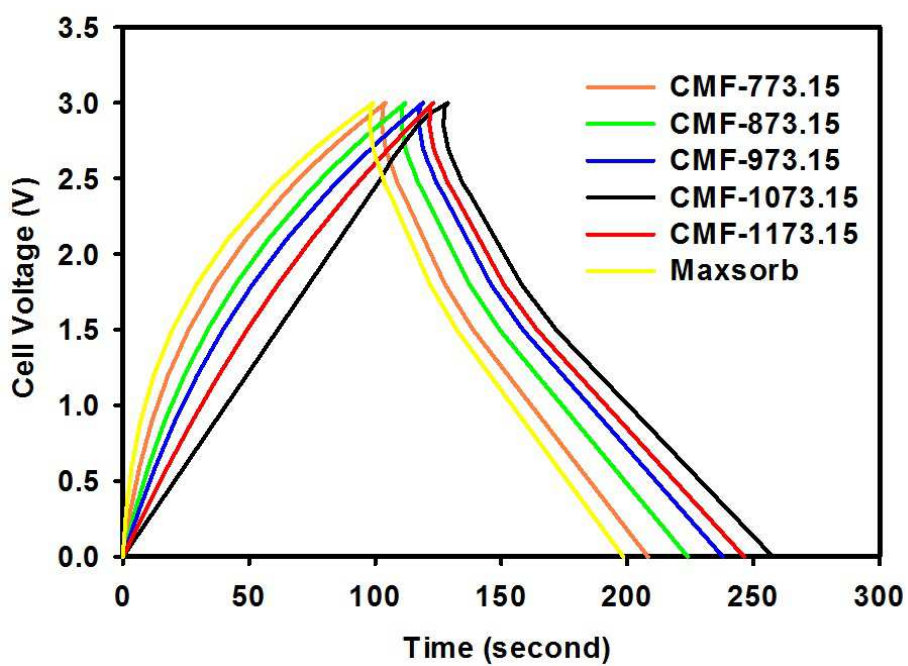


Fig. S2 Galvanostatic charge-discharge curves of Maxsorb and CMFs supercapacitors measured in 1.5 M TEABF₄/ACN electrolyte at a scan rate of 10 mV s⁻¹