

Supplementary Information

Asymmetric supercapacitor based on α -MoO₃ cathode and porous activated carbon anode materials

F. Barzegar^a, A. Bello^a, D. Y. Momodu^a, J. K. Dangbegnon^a, F. Taghizadeh^a, M.J. Madito^a, T.M. Masikhwa^a and N. Manyala^{a*}

^aDepartment of Physics, Institute of Applied Materials, SARCHI Chair in Carbon Technology and Materials, University of Pretoria, Pretoria 0028, South Africa.

***Email address:** nholu.manyala@up.ac.za (N. Manyala)

Corresponding author Tel: +27 (0)12 420 3549, Fax: +27 (0)12 420 2516

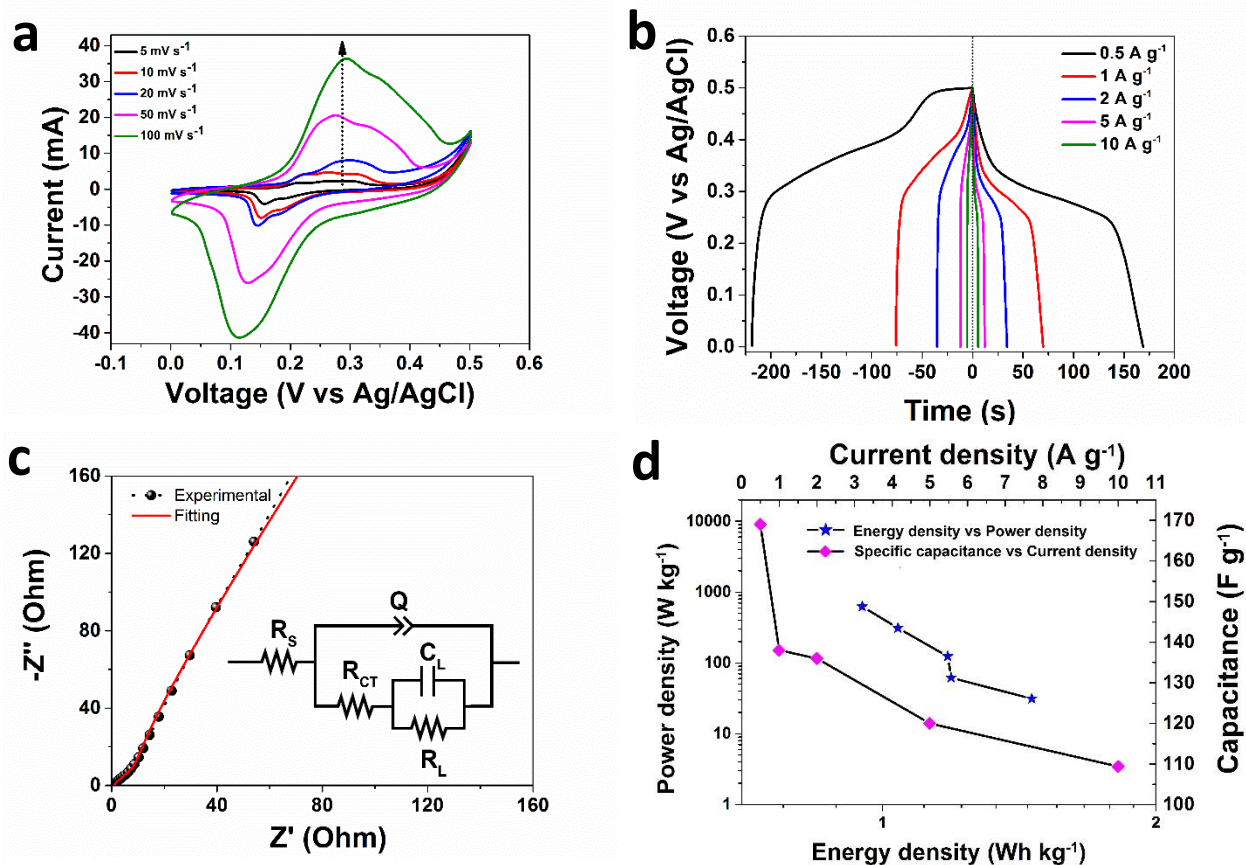


Figure S1. (a) CV curves of α -MoO₃ at scan rates of 5 to 100 m V s⁻¹, (b) The galvanostatic charge/discharge curves of α -MoO₃ from 0.5 to 10 A g⁻¹, (c) EIS plot and fitting curve for single electrode with the inset to the figure being equivalent circuit used for fitting the data of the α -MoO₃ and (d) Ragone plot and the specific capacitance as function of the current density of α -MoO₃

Table S1 Fitting parameters for the single electrode of α -MoO₃

R_s (Ω)	Q ($F \cdot s^{a-1}$)	n	R_{CT} (Ω)	C_L (F)	R_L (Ω)
0.8	0.013	0.7	32	5.34 e-3	800

$X^2 = 0.016$ $X/\sqrt{N} = 0.021$ $CPE \equiv Q$

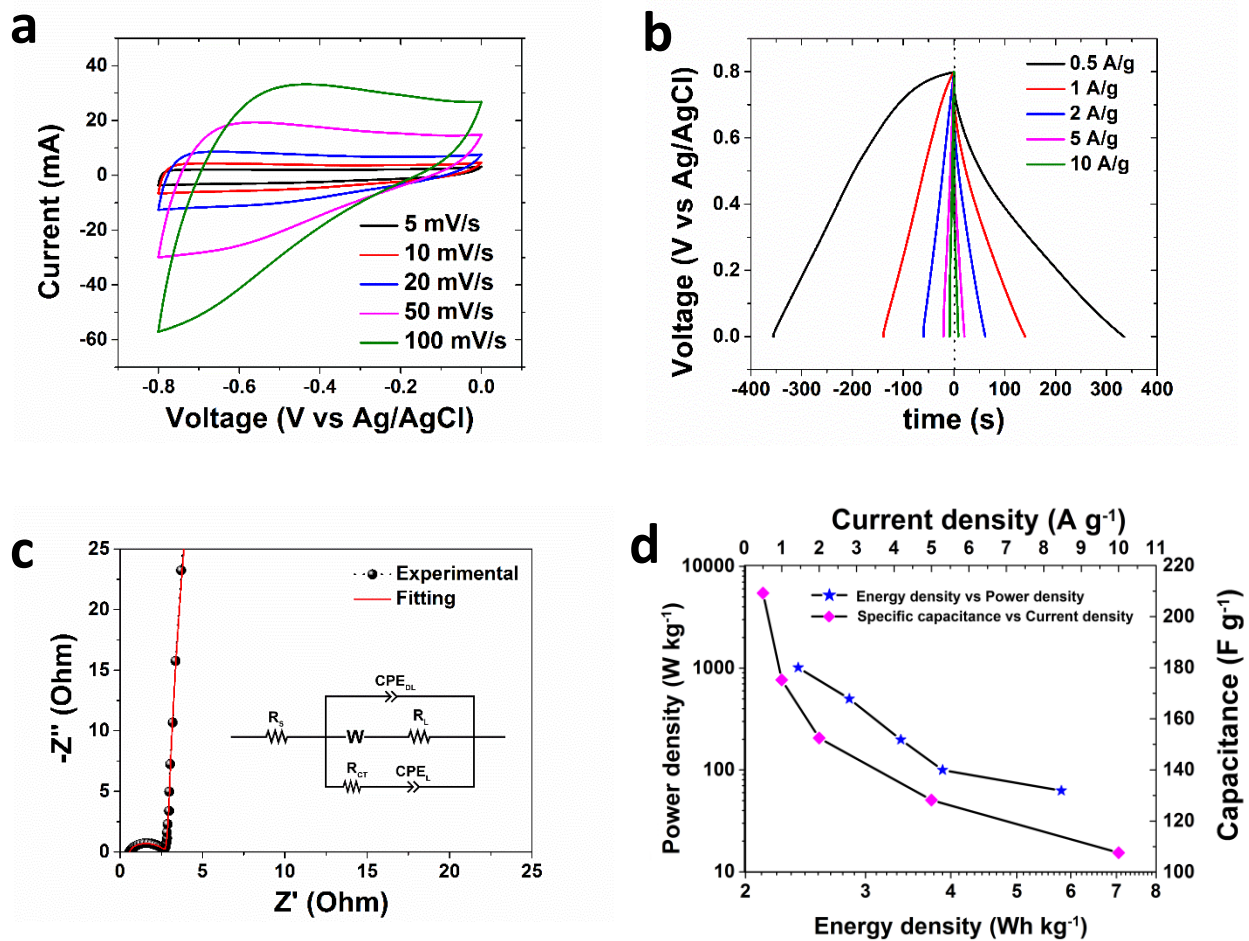


Figure S2. (a) CV curves of AC at scan rates of from 5 to 100 m Vs⁻¹, (b) The galvanostatic charge/discharge curves of AC from 0.5 to 10 A g⁻¹, (c) EIS plot and fitting curve for single electrode with the inset to the figure being equivalent circuit used for fitting the data of the AC and (d) Ragone plot and the specific capacitance as function of the current density of AC

Table S2 Fitting parameters for the single electrode of AC

R_S (Ω)	Q_{DL} (F.s^{a-1})	a_{DL}	A_w (Ω.s^{-0.5})	R_L (Ω)	R_{CT} (Ω)	Q_L (F.s^{a-1})	a_L
0.596	0.0002	1	75.34	0.413	2.314	0.433	1

$X^2 = 0.4$ $X/\sqrt{N} = 0.1$ $CPE_{DL} \equiv Q_{DL}$ $CPE_L \equiv Q_L$ $a_{DL} \equiv a_L \equiv n$