

## **Supporting Information**

### **Luminescent MoS<sub>2</sub> Quantum Dots with Tunable Operating Potential for Energy Enhanced Aqueous Supercapacitors**

Sarojini Jeeva Panchu<sup>a, c</sup>, Kumar Raju<sup>b\*</sup>, Hendrik C. Swart<sup>c</sup>, Bharatiraja Chokkalingam<sup>d</sup>, Malik Maaza<sup>e</sup>, Mohamed Henini<sup>f</sup>, Mathew K. Moodley<sup>a\*</sup>

<sup>a</sup>Discipline of Physics, School of Chemistry and Physics, University of KwaZulu-Natal, Private Bag X54001, Durban, 4000, South Africa

<sup>b</sup>Energy Centre, Council for Scientific and Industrial Research (CSIR), Pretoria 0001, South Africa

<sup>c</sup>Department of Physics, University of the Free State, PO Box 339, Bloemfontein, 9300, South Africa

<sup>d</sup>Department of Electrical and Electronics Engineering, SRM Institute of Science and Technology, Kattankulathur, India

<sup>e</sup>Nanosciences African Network (NANOAFNET), iThemba LABS-National Research Foundation, 1 Old Faure Road, Somerset West 7129, PO Box 722, Somerset West, South Africa

<sup>f</sup>School of Physics and Astronomy, Nottingham Nanotechnology and Nanoscience Center University of Nottingham, NG7 2RD, United Kingdom

Corresponding Authors:

Dr. Mathew K. Moodley, Email: [Moodleymk@ukzn.ac.za](mailto:Moodleymk@ukzn.ac.za)

Dr. Kumar Raju, Email: [kraju@csir.co.za](mailto:kraju@csir.co.za)

Table of contents	Page
-------------------	------

**Table S1** **S2**

**Table S2** **S3**

Comparing details	Voltage (V)	Ampere (A)	Sheet Resistance ( $R_{sh}$ )/ $\Omega$	Resistivity $\rho$ /( $\Omega.cm$ )	Conductivity $\sigma$ /( $\Omega^{-1}.cm^{-1}$ )
<b>MoS<sub>2</sub></b>	0.5	0.000021	107.601x10 <sup>3</sup>	1.076	0.9294
<b>MoS<sub>2</sub> NCs</b>	0.5	0.00375	0.604x10 <sup>3</sup>	0.00604	165.56
<b>MoS<sub>2</sub> QDs</b>	0.5	0.00608	0.373x10 <sup>3</sup>	0.00373	268.46

**Table S1:** Comparison of electrical conductivity of MoS<sub>2</sub>, MoS<sub>2</sub> NCs and MoS<sub>2</sub> QDs

<b>Electrode Material</b>	<b>Energy density (Wh/kg)</b>	<b>Ref</b>
<b>Flower-like MoS<sub>2</sub></b>	8.59	1
<b>MoS<sub>2</sub> Nanospheres</b>	5.4	2
<b>MoS<sub>2</sub>/rGO</b>	6.2	3
<b>MoS<sub>2</sub>/carbon Nanosphere</b>	7.4	1

**Table S2:** The comparison of energy density with MoS<sub>2</sub> QDs with that of the reported values

### References

- 1.Khawula T.N.Y; Raju K., Franklyn P.J., Sigalas I., Ozoemena K.I, Symmetric pseudocapacitors based on molybdenum disulfide (MoS<sub>2</sub>)-modified carbon nanospheres: correlating physicochemistry and synergistic interaction on energy storage, Journal of Materials Chemistry A, 2016, 4, 6411-6425. <https://doi.org/10.1039/C6TA00114A>
- 2.Javed M.S.; Dai S., Wang M., Guo D., Chen L., Wang X., Hu C., Xi Y. High performance solid state flexible supercapacitor based on molybdenum sulfide hierarchical nanospheres, Journal of Power Sources, 2015, 285, 63-69. <https://doi.org/10.1016/j.jpowsour.2015.03.079>
- 3.Zhang Y.; Ju P., Zhao C., Qian X. In-situ Grown of MoS<sub>2</sub>/RGO/MoS<sub>2</sub>@Mo Nanocomposite and Its supercapacitor Performance, Electrochimica Acta, 2016, 219, 693-700. <https://doi.org/10.1016/j.electacta.2016.10.072>