

## Electronic Supplementary Information (ESI) for

# Cost-Effective and Morphology-Controllable Niobium Diselenides for Highly Efficient Counter Electrode of Dye-Sensitized Solar Cells

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**Table S1** Comparison of DSC performance parameters in different documents

| CE                    | V <sub>OC</sub> /V | J <sub>SC</sub> /<br>(mAcm <sup>-2</sup> ) | FF   | PCE/% | PCE of Pt<br>/% | Compare<br>to Pt | Reference  |
|-----------------------|--------------------|--|------|-------|-----------------|------------------|------------|
| MoS <sub>2</sub>      | 0.76               | 13.84                                      | 0.73 | 7.59  | 7.64            | 99.3%            | 1          |
| WS <sub>2</sub>       | 0.78               | 14.13                                      | 0.70 | 7.73  |                 | 101.2%           |            |
| CoS                   | 0.71               | 16.31                                      | 0.66 | 7.67  | 7.70            | 99.6%            | 2          |
| MoS <sub>2</sub> /RGO | 0.73               | 12.51                                      | 0.66 | 6.04  | 6.38            | 94.7%            | 3          |
| FeS <sub>2</sub>      | 0.71               | 15.14                                      | 0.68 | 7.31  | 7.52            | 97.2%            | 4          |
| Co <sub>0.85</sub> Se | 0.738              | 16.98                                      | 0.75 | 9.40  | 8.64            | 108.8%           | 5          |
| Ni <sub>0.85</sub> Se | 0.739              | 15.63                                      | 0.72 | 8.32  |                 | 96.3%            |            |
| NbSe <sub>2</sub> /C  | 0.77               | 15.58                                      | 0.65 | 7.80  | 7.90            | 98.7%            | Our result |

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**Table S2** Detailed fitting parameters of the Nyquist plot in EIS experiments

| CE                     | $R_1^a/\Omega$ | $R_2^b/\Omega$ | $W_{1-R}^c$ | $W_{1-T}$ | $W_{1-P}$ | $CPE_{1-T}^d$          | $CPE_{1-P}$ |
|------------------------|----------------|----------------|-------------|-----------|-----------|------------------------|-------------|
| NbSe <sub>2</sub> -NSs | 27.72          | 5.18           | 2.52        | 0.054     | 0.392     | $1.281 \times 10^{-5}$ | 0.76        |
| NbSe <sub>2</sub> -NRs | 24.07          | 7.04           | 1.78        | 0.077     | 0.547     | $2.096 \times 10^{-4}$ | 0.69        |
| NbSe <sub>2</sub> /C   | 19.38          | 12.41          | 6.63        | 0.080     | 0.479     | $4.78 \times 10^{-5}$  | 0.75        |
| Pt                     | 8.15           | 4.70           | 4.20        | 0.038     | 0.348     | $7.13 \times 10^{-5}$  | 0.76        |

a:  $R_s$ ; b:  $R_{ct}$ ; c:  $Z_N$ ; d: CPE.