Shape Controllable MoS\textsubscript{2} Nanocrystals Prepared by Single Precursor Route for Electrocatalytic Hydrogen Evolution

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1. Experiment

1.1 Fabrication of MoS\textsubscript{2} nanorods, nanoribbons, and bulks

**Synthesis of MoS\textsubscript{2} nanorods.** 0.25 mmol of MoDTC (216mg) was added to 1 mL of 1-DDT and 20 mL of 1-ODE. The resulting mixture was heated to 190 °C under nitrogen. The reactants maintain the temperature for 90 min with strong agitation. The subsequent purification procedures were the same as the treatment for MoS\textsubscript{2} QDs.

**Synthesis of MoS\textsubscript{2} nanoribbons.** A mixture of 216 mg of MoDTC (0.25 mmol) in 1 mL of 1-DDT and 20 mL of 1-ODE was heated 100°C under nitrogen for 30 min. Subsequently, the mixture was heated to 220 °C and held the temperature for 90 min with strong agitation. The purification process of MoS\textsubscript{2} nanoribbons was identical to the treatment for MoS\textsubscript{2} QDs.

**Synthesis of MoS\textsubscript{2} bulks.** Decomposition of 216 mg of MoDTC (0.25 mmol), in 20 mL of 1-ODE and 1 mL of 1-DDT at 250 °C for 90 min resulted in MoS\textsubscript{2} bulks. The purification process of MoS\textsubscript{2} bulks was the same as the treatment for MoS\textsubscript{2} QDs.
2. Additional Figures

**Figure S1.** XRD pattern of the precursor (MoDTC).

**Figure S2.** (a) Survey XPS patterns of precursor (MoDTC) and high-resolution scans of (b) Mo3d, (c) S2p, and (d) O1s electrons.
Figure S3. HRTEM images of samples R1 (a), R2 (b), R3 (c), R4 (d)

Figure S4. The electron diffraction patterns of sample R1.
**Figure S5.** FTIR spectra of the MoDTC, 10 min product (sample R1) and 90 min product (sample R3).

**Figure S6.** XRD of reaction productions synthesized at different temperatures (160 °C, 190 °C, 220 °C, and 250 °C).