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## **Supporting Information**

#### A General Precipitation Strategy for Large-scale

#### Synthesis of Molybdates Nanostructures

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#### 1. Characterization

The samples were characterized by XRD (Model D/MAX-RB, Rigaku Co., Tokyo, Japan; CuKα, 10-70o), TEM, SAED (Model JEM-2100F, JEOL, Tokyo, Japan), SEM (JSM-6700F, JEOL, Tokyo, Japan) and TG-DTA (STA-449C, Netzsch, Bayern, Germany)

#### 2. SEM image of ZnMoO<sub>4</sub>·*n*H<sub>2</sub>O



Figure S1. SEM image of ZnMoO<sub>4</sub>·nH<sub>2</sub>O

### 3. Thermal behavior of ZnMoO<sub>4</sub>·*n*H<sub>2</sub>O



Figure S2. TG-DTA plot of ZnMoO<sub>4</sub>·nH<sub>2</sub>O

# 4. TEM image and SAED pattern of ZnMoO<sub>4</sub>



Figure S3. a) TEM image and b) SAED pattern of ZnMoO<sub>4</sub>

#### 5. TEM images of MnMoO<sub>4</sub>·nH<sub>2</sub>O and MnMoO<sub>4</sub>



Figure S4. a) TEM image, b) enlarged image, c) SAED pattern of MnMoO<sub>4</sub>·*n*H<sub>2</sub>O, d) TEM image, e) enlarged image, f) HRTEM image of MnMoO<sub>4</sub> from the dehydration of MnMoO<sub>4</sub>·*n*H<sub>2</sub>O

6. TEM images of CoMoO<sub>4</sub>



Figure S5. a) TEM image and b) HRTEM image of CoMoO<sub>4</sub>