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Supplementary Information

A general route to thickness-tunable multilayered sheets of sheelite-type metal molybdate and their self-assembled films

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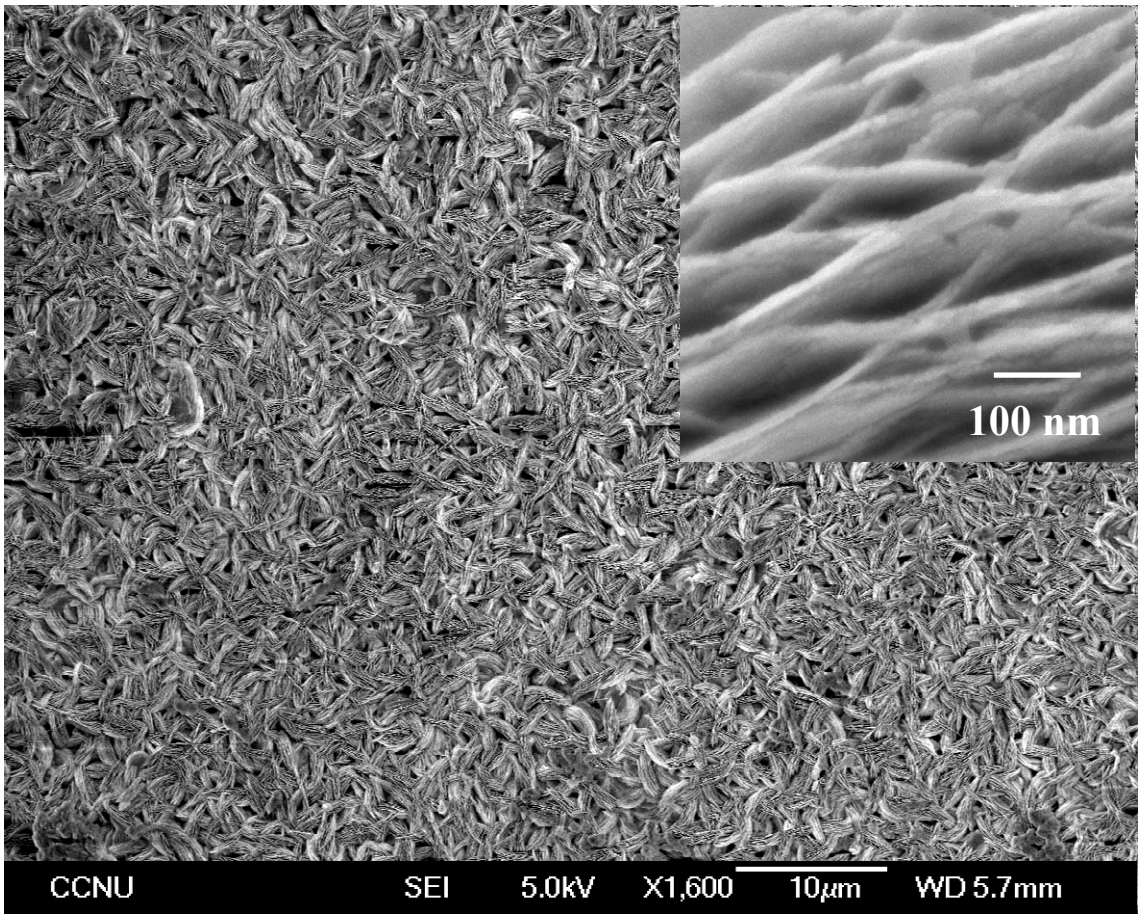

Fig. S1 Low-magnification SEM image of the $SrMoO_4$ film. Insert is an enlarged picture showing the cross-linked structure in the multilayered sheets.

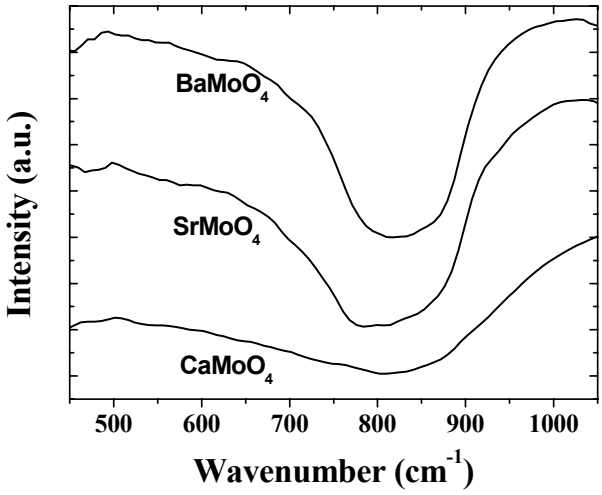

Fig. S2 FT-IR results of the as-prepared $CaMoO_4$, $SrMoO_4$, and $BaMoO_4$ films. From the curves, broad peaks centered at ~824 cm^{-1}, 800 cm^{-1}, and 821 cm^{-1} are observed for $CaMoO_4$, $SrMoO_4$, and $BaMoO_4$, respectively. These bands can be assigned to $F_2(v_3)$ antisymmetric stretch vibrations, which were reported to be ascribed to the Mo-O stretching vibration in MoO_4^{2-} tetrahedra [1]. In addition, it is obvious that different mass of the cations in the sheelite crystals can result in the shift of this kind of stretching vibration.

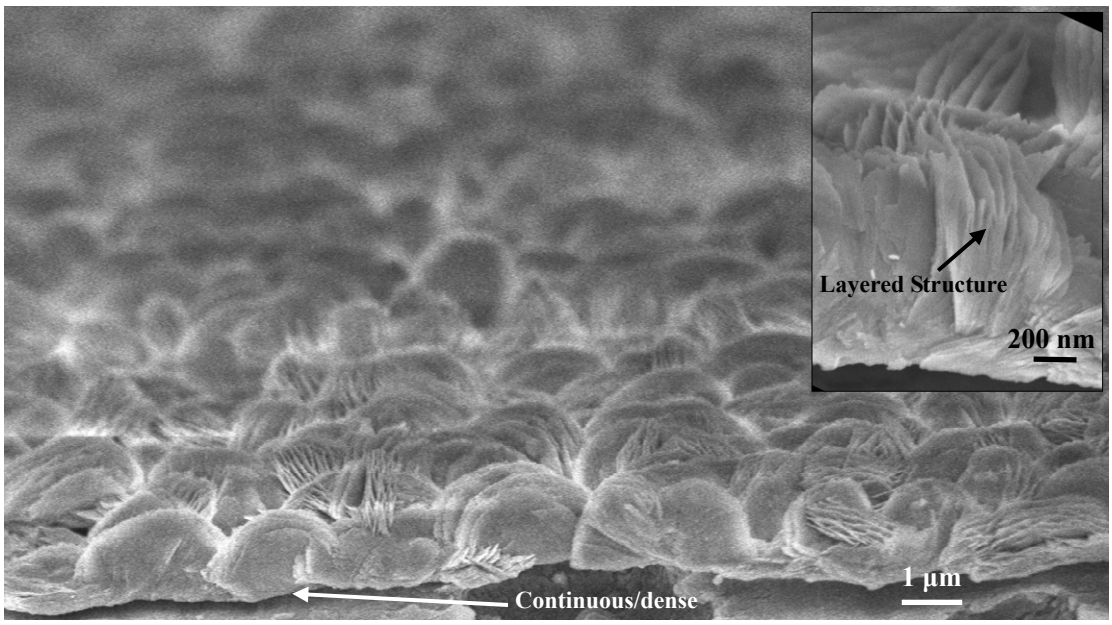

Fig. S3 Cross-sectional SEM image of the as-prepared $SrMoO_4$ film. It can be seen that the bottom parts of all the sheets are connected tightly with each other, forming a continous and dense film. Inset is an enlarged cross-sectional image, further showing the layered structures of molybdates.

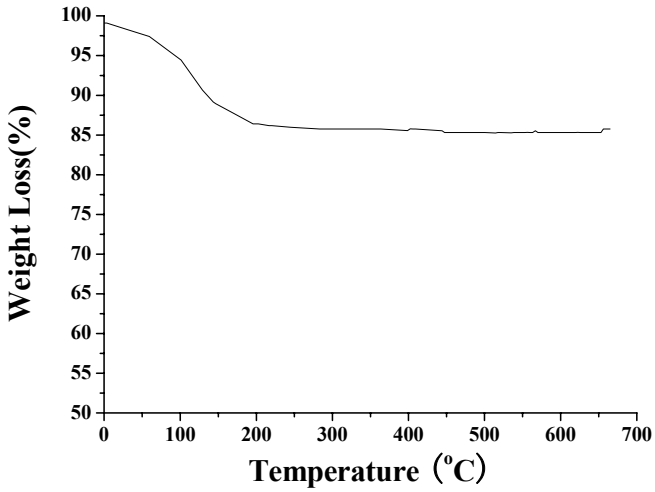

Fig. S4 TGA result of the prepared $SrMoO_4$ multilayered sheets. A remarkable weight loss at ~125 ^oC is observed, which can be due to the loss of water molecules in the air adsorbed on the sheets. No weight loss can be detected when the temperature is over 200 ^oC, indicating the chemical stability of the as-prepared product. The total weight loss is ca. 12.5 %. Similar TGA results are obtained for $BaMoO_4$ and $CaMoO_4$.

Reference

[1] K. Nakamoto, *Infrared and Raman Spectra of Inorganic and Coordination Compounds*, fourth ed.; Wiley, New York, **1986**.