Electronic Supplementary Material (ESI) for CrystEngComm

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Localized Crystallization: A Chemical Transformation of Nb_2O_5 Rod-Like Arrays into Ordered Niobate Arrays

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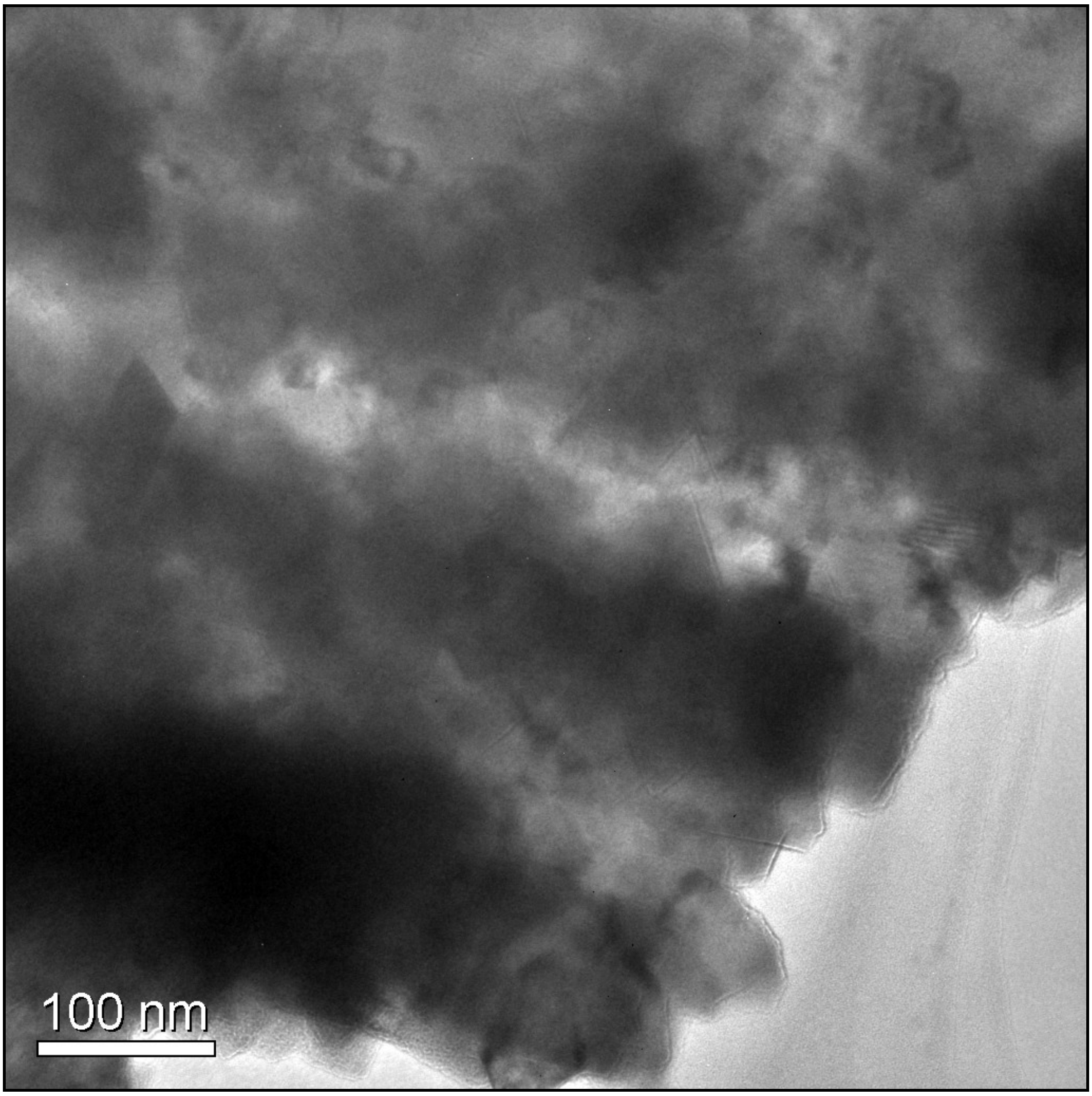

Fig. S1. TEM image of a $NaNb_3O_8$ microtube showing that the wall is porous.

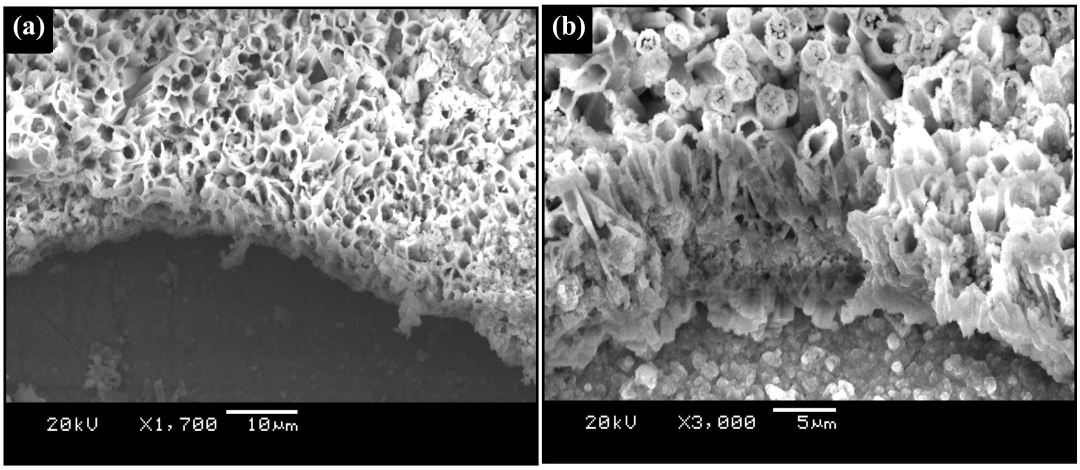

Fig. S2. The side view of $NaNb_3O_8$ microtubes without (a) and with (b) top caps.

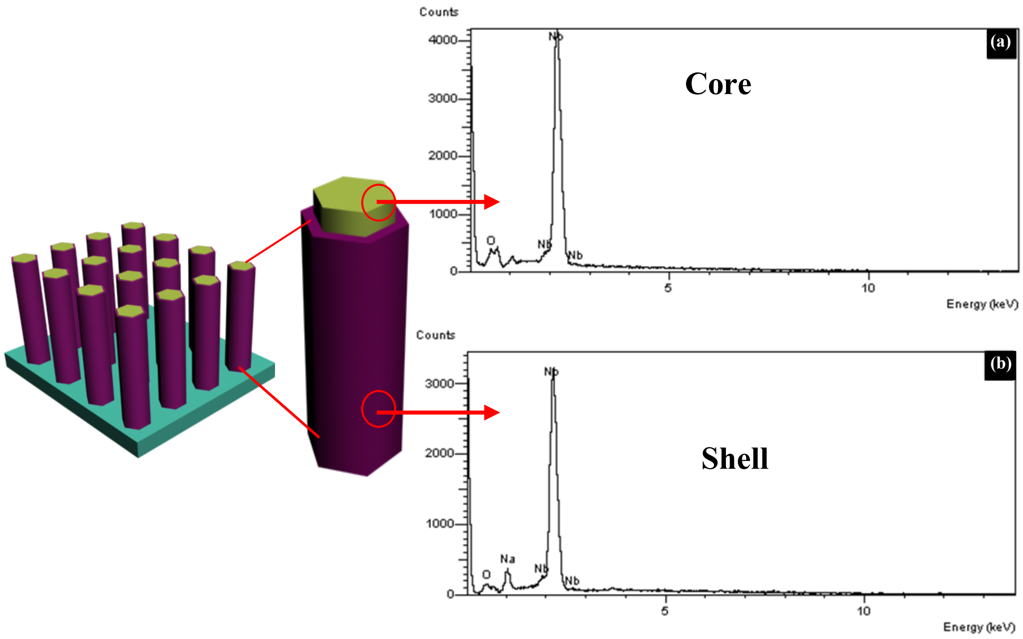

Fig. S3. EDX spectra of the core/shell structures emphasizing the compositional difference of Nb_2O_5 core (a) and $NaNb_3O_8$ shell (b).

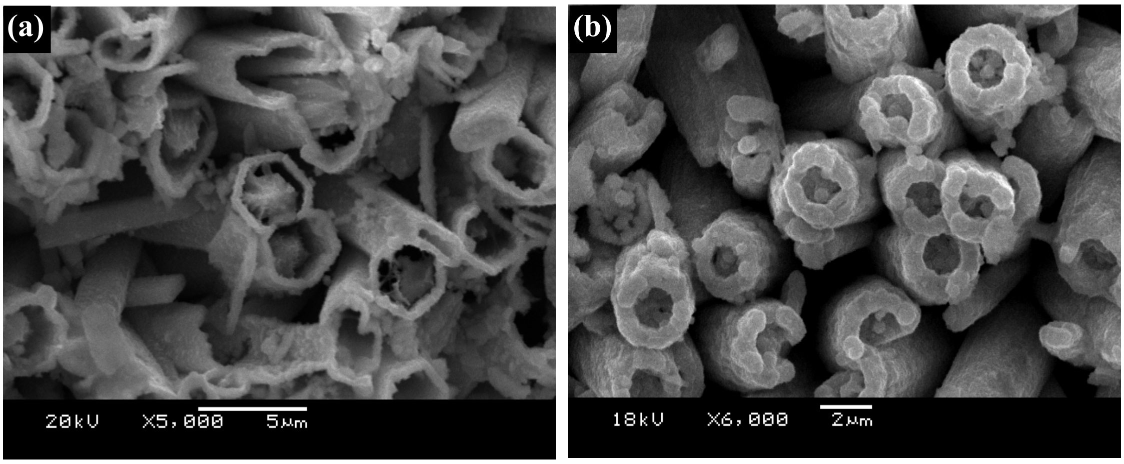

Fig. S4. **(a)** Quick dissolution process results in poor structural strength of the thin shells collapse. **(b)** Slow dissolution process renders the growth of $NaNb_3O_8$ in nanoscale voids and the shells become thick, restraining hollowing process. The NH_4F concentration was a) 1.8 M and b) 1.0 M.

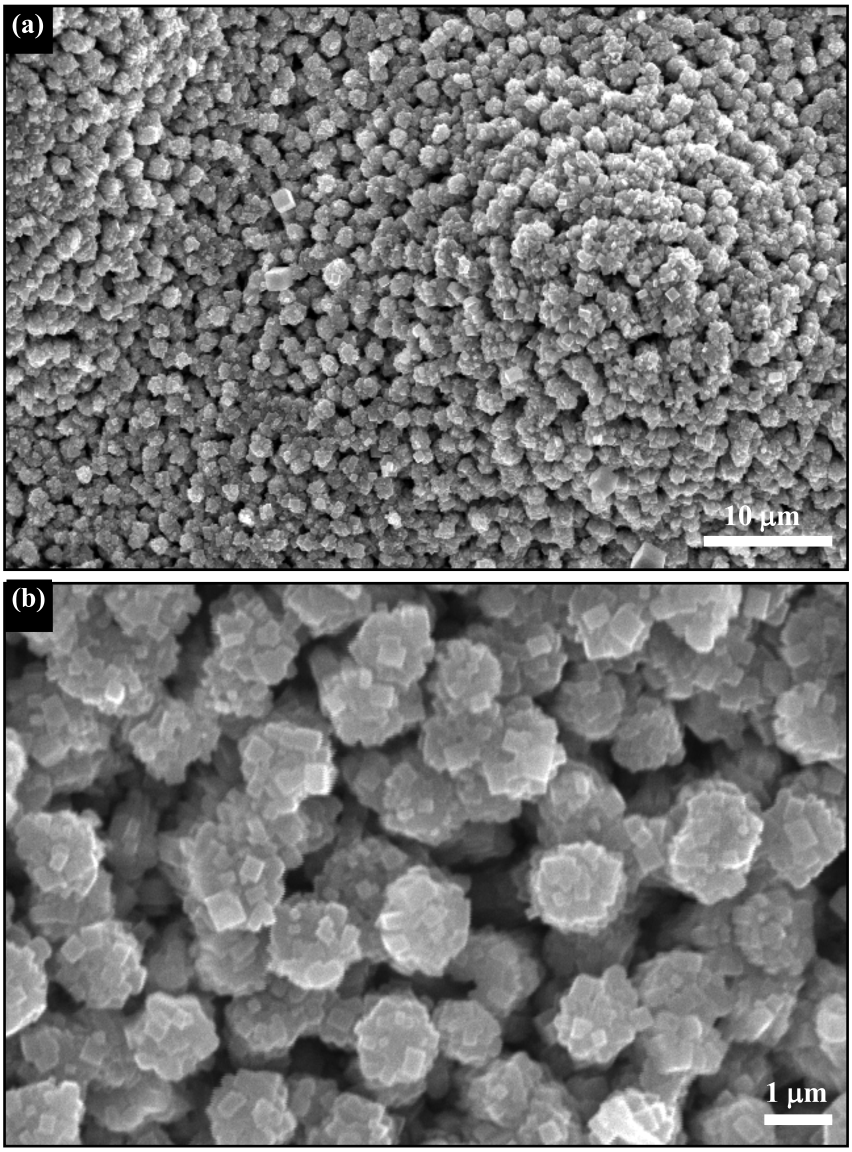

Fig. S5. SEM images of sodium niobate thin film produced without the addition of NH_4F.

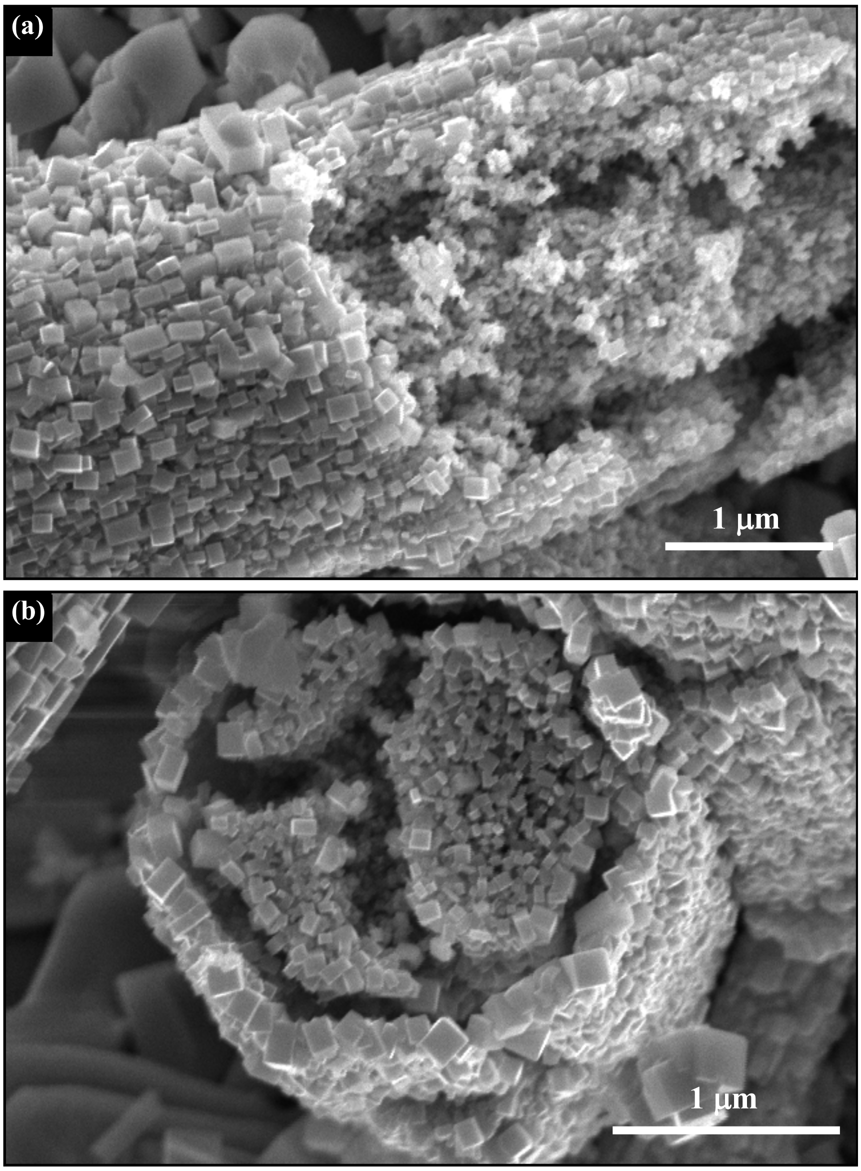

Fig. S6. SEM images of broken $NaNbO_3$ hierarchical microrods from A-Sample Nb_2O_5.

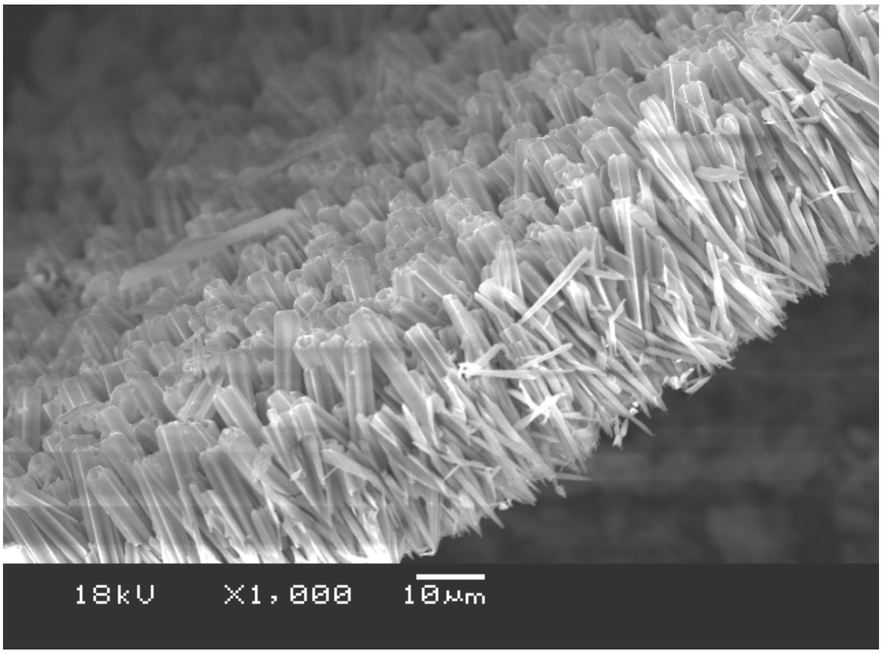

Fig. S7. A cross section image of the free-standing KNMT thin film.

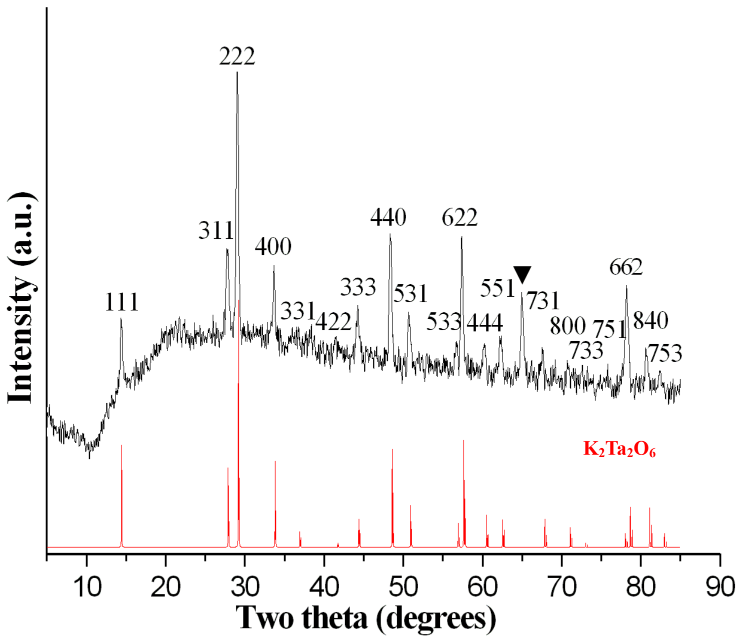

Fig. S8. XRD pattern of the as-obtained KNMT arrays showing that it is completely identical to $K_2Ta_2O_6$ (JCPDS Card No. 35-1464), which indicating the resemblance of the crystal structure. The peaks labeled with black triangles correspond to the diffraction peak of Nb substrate.

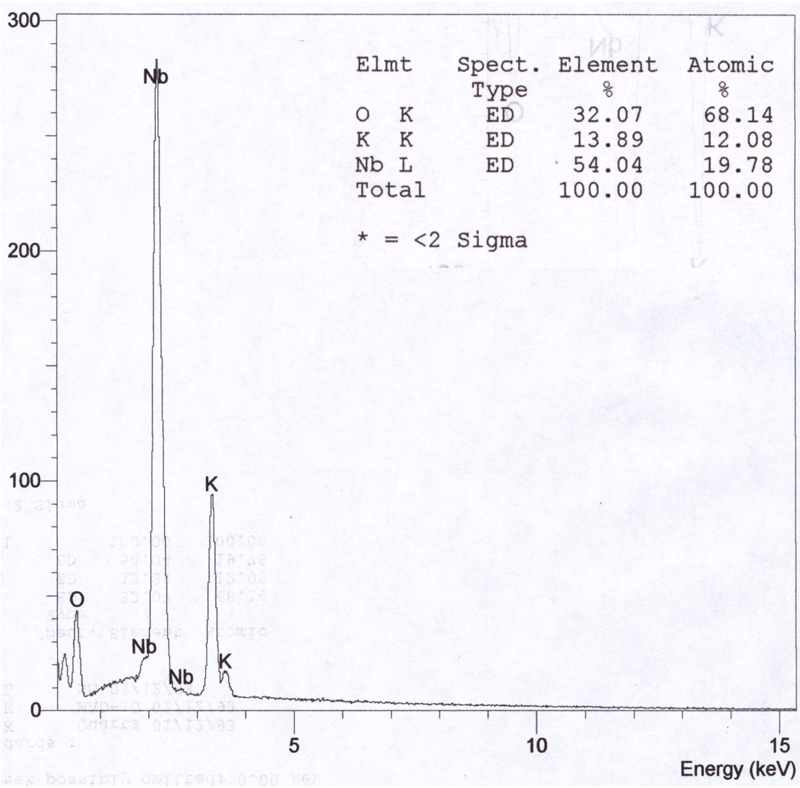

Fig. S9. EDX pattern for the as-obtained KNMT.

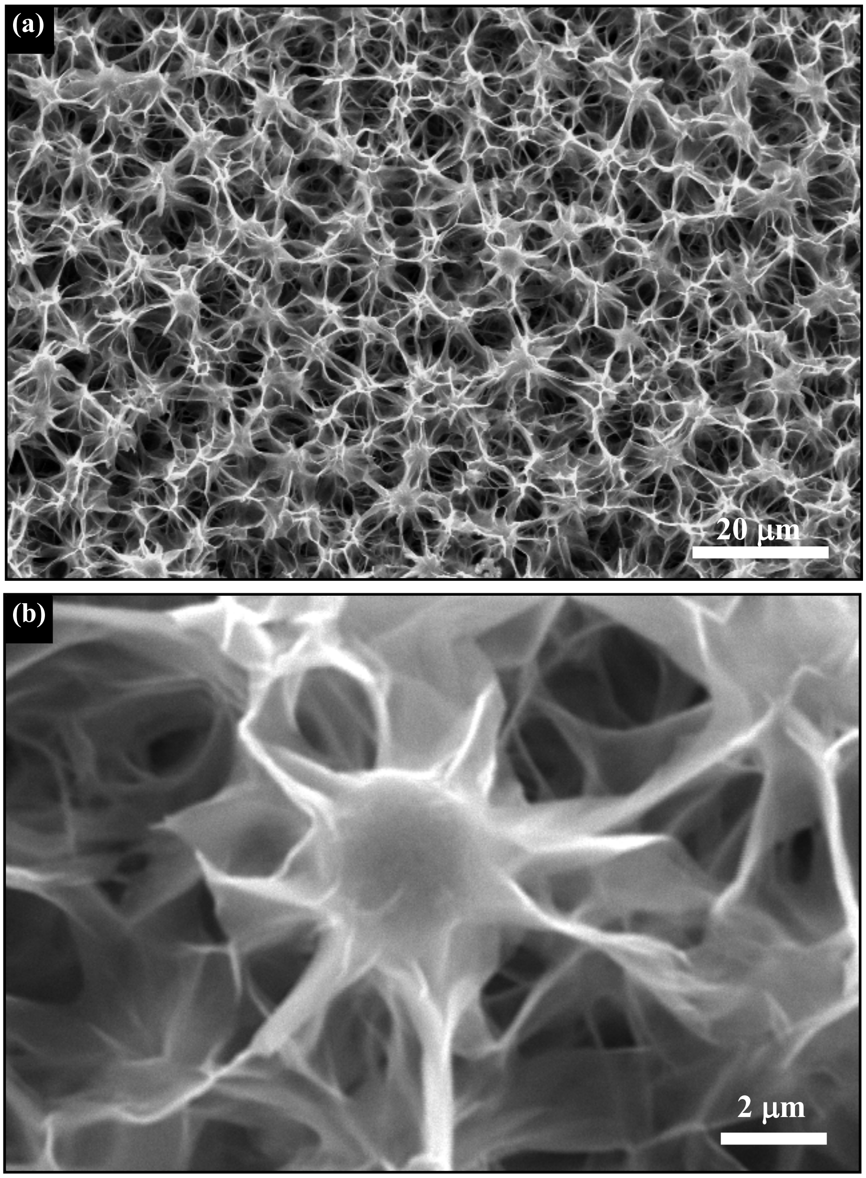

Fig. S10. SEM images of potassium niobate thin film produced at lower KOH concentration (0.15–0.25 M) with other reaction conditions unchanged.