

Supplementary information

**Epitaxial growth and cationic exchange properties of layered
KNb₃O₈ thin films**

A. Waroquet^a, V. Demange^{a,}, N. Hakmeh^a, J. Perrière^b, S. Députier^a, M. Guilloux-Viry^a*

^aInstitut des Sciences Chimiques de Rennes – UMR 6226 CNRS – Université de Rennes 1

263, Avenue du Général Leclerc, 35042 Rennes Cedex, France

^bInstitut des Nanosciences de Paris, Université de Paris 1,

4 place Jussieu, 75005 PARIS, France

* Corresponding author. E-mail address: valerie.demange@univ-rennes1.fr

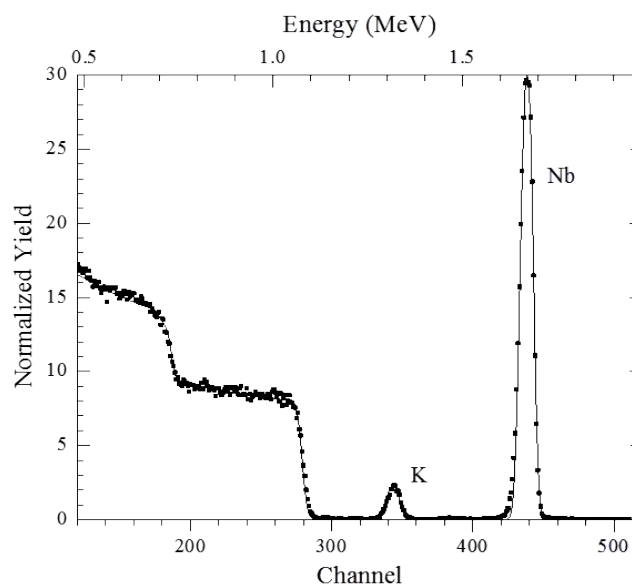


Fig. S11. RBS spectrum for a KNb_3O_8 film on sapphire obtained using a 2 MeV He ion beam. The film composition was obtained by the use of the RUMP simulation program. The experimental (points) and simulated (line) spectra are both shown in the figure, and the respective contribution of K and Nb are indicated.

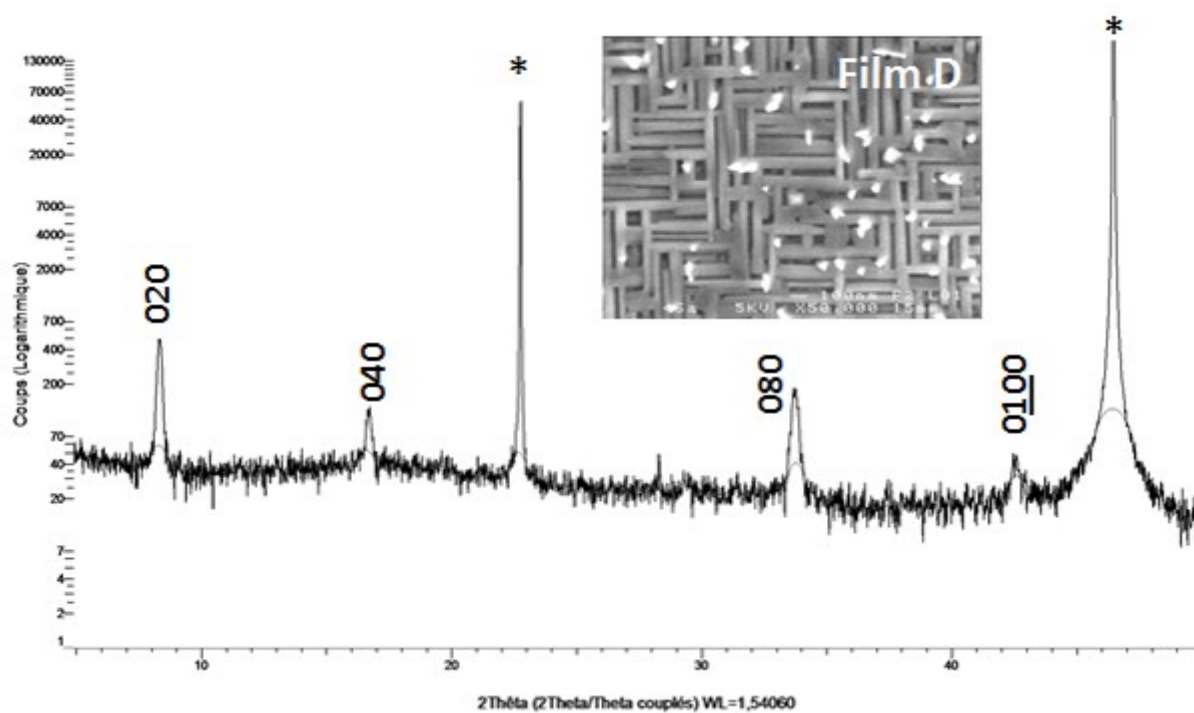


Fig. S12. XRD diagram and SEM micrographs of films D (substrate: *).

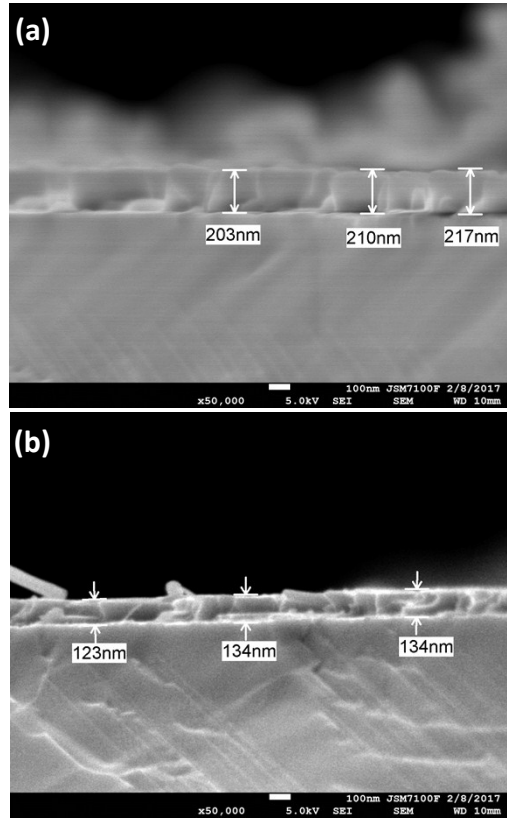


Fig. SI3. Cross-section SEM micrographs of films B (a) and E (b).

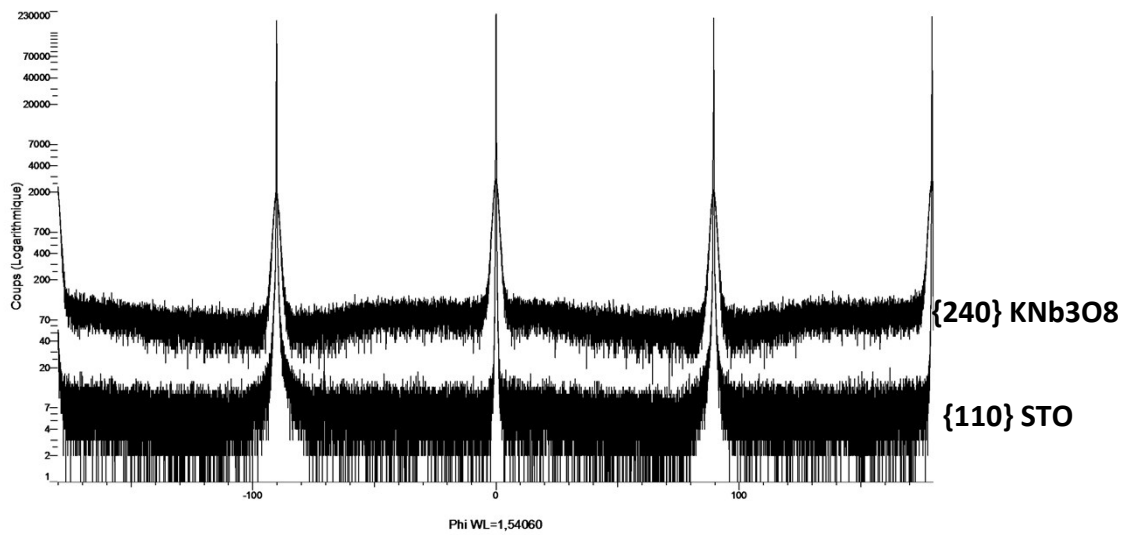


Fig. SI4. ϕ -scans of the {240} planes of the KNb_3O_8 phase and of the {110} planes of the (100)STO substrate (film E).

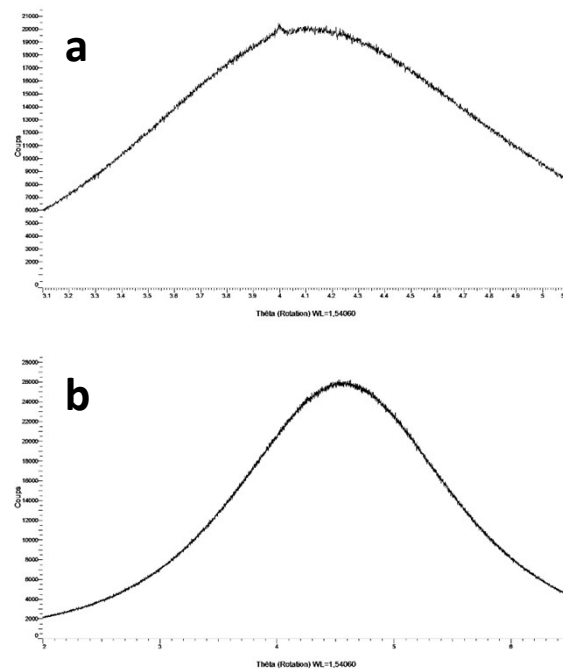


Fig. SI5. (020) rocking-curves of KNb_3O_8 : (a) film B; (b) film E.

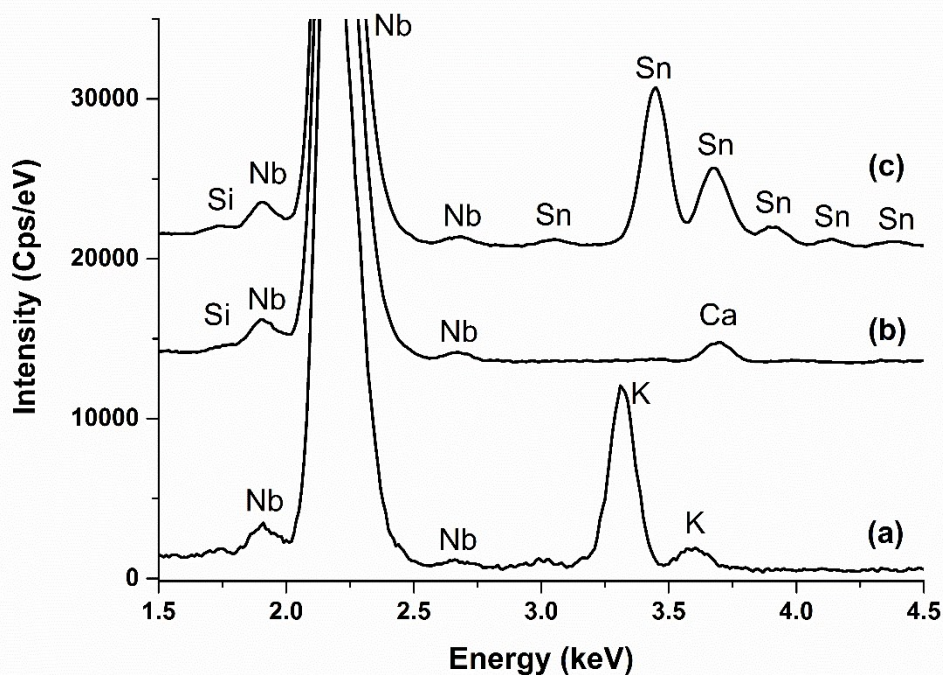


Fig. SI6. TEM-EDXS spectra of (a) film E (KNb_3O_8); (b) film F2 ($\text{H}_3\text{ONb}_3\text{O}_8$); (c) film F3 ($\text{Sn}_{0.6}\text{Nb}_3\text{O}_8$). Si and Ca signals come from the silica substrate.

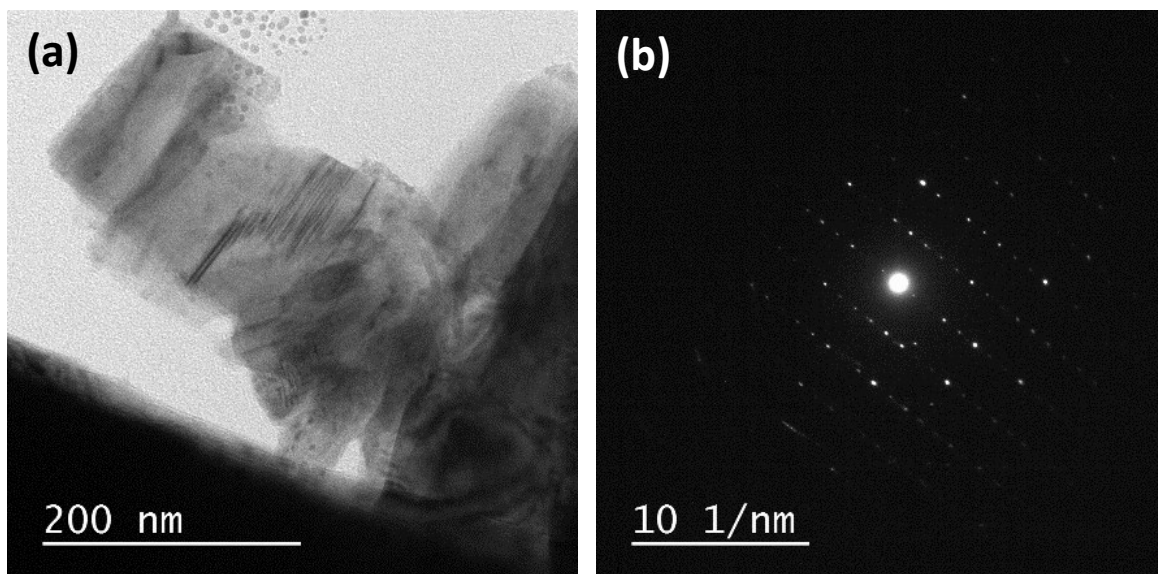


Fig. S17. Brightfield micrograph of film F2; (b) EDP along the [010] zone axis of film F2.

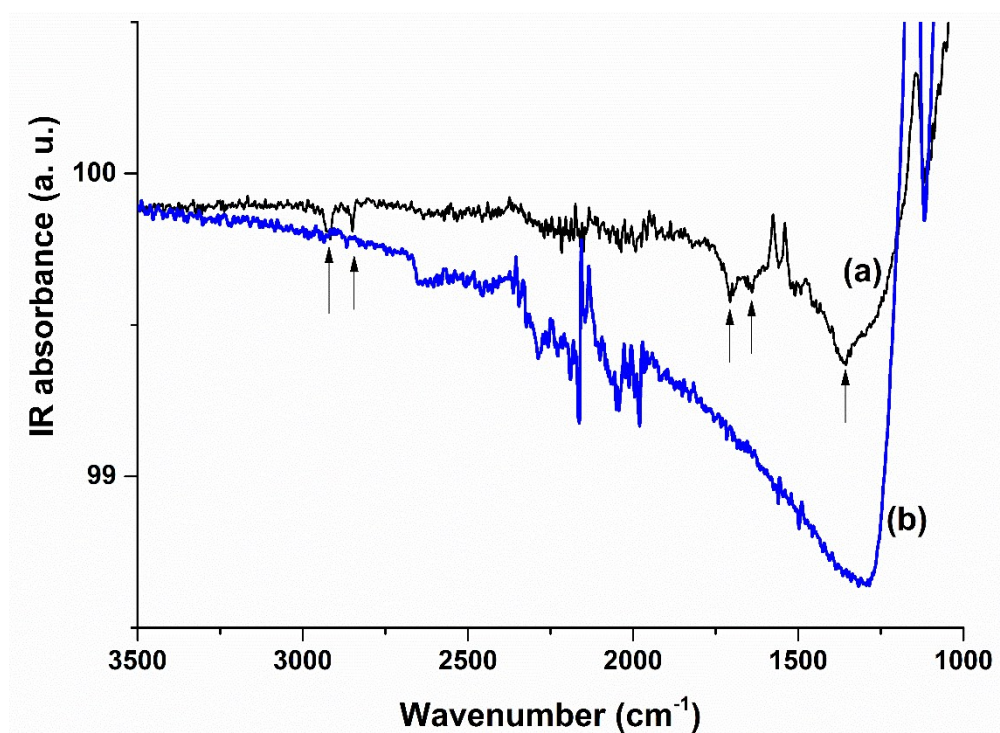


Fig. S18. IR spectra of $\text{H}_3\text{ONb}_3\text{O}_8$ film just after protonation (a), and after 24h in dessicator (b). Arrows show absorption bands corresponding to the species intercalated just after protonation.

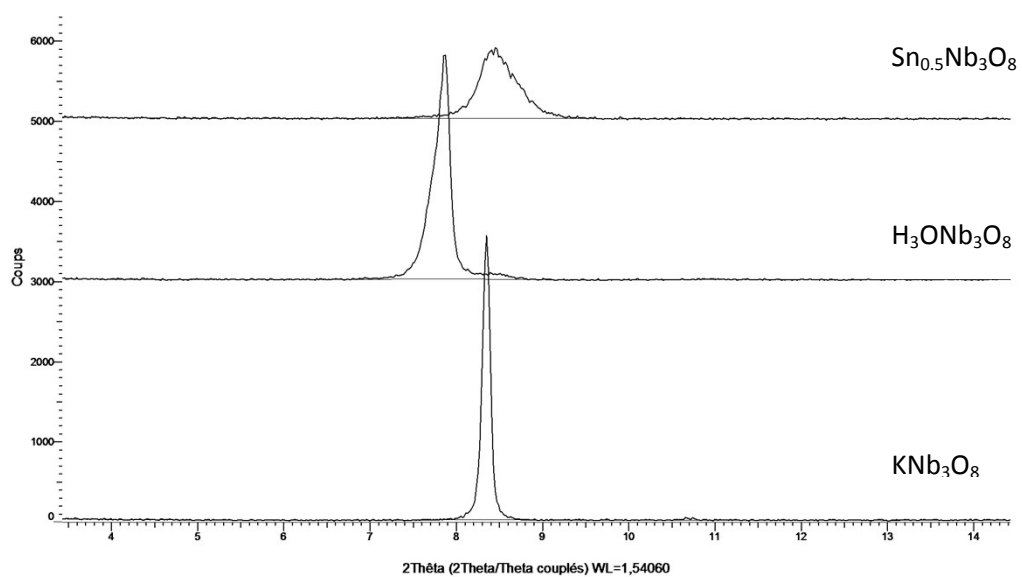


Fig. S19. XRD diagrams in $\theta/2\theta$ mode of KNb_3O_8 film grown on silica, of same film after protonation,

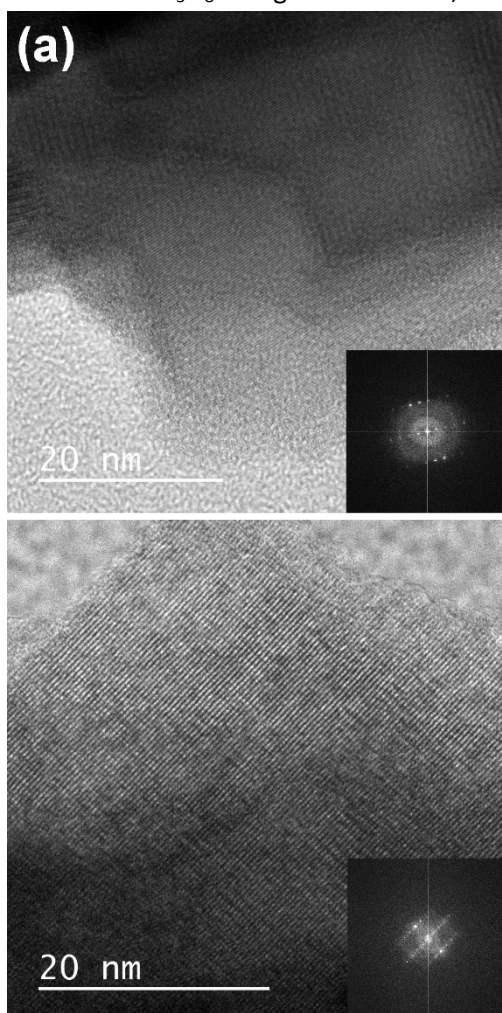


Fig. S110.