

Supporting Information

Reversible modulation of photoenergy in Sm-doped (K_{0.5}Na_{0.5})NbO₃ transparent ceramics via photochromic behavior

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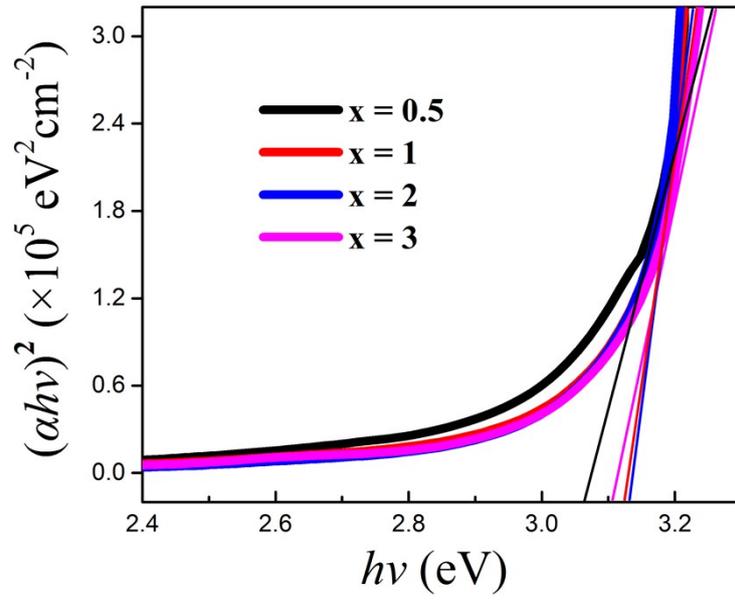


Fig. S1 The plots of $(\alpha hv)^2$ versus hv , energy band gap (E_g) for the KNN-Sm-x ceramics.

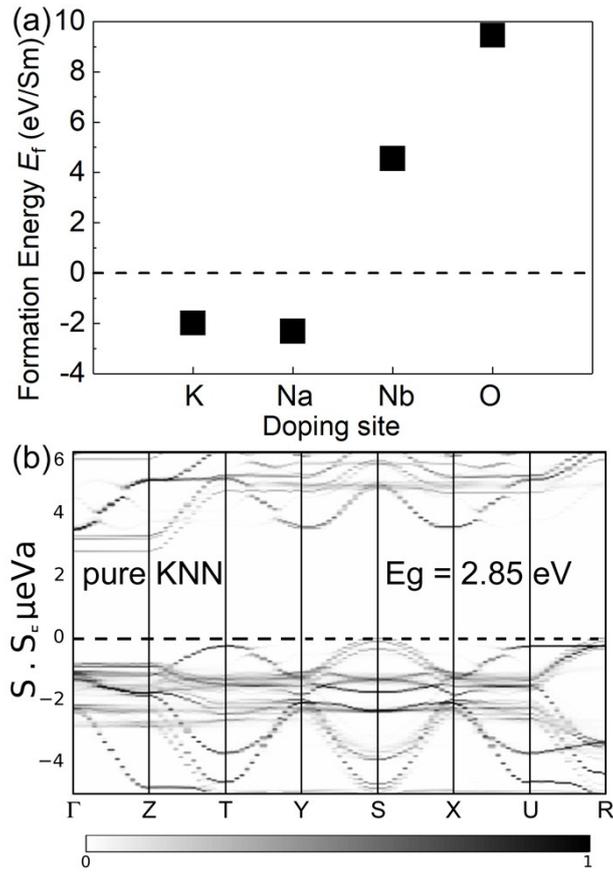


Fig. S2 (a) The formation energy of Sm-doped KNN with different Sm-doping sites.

(b) The unfolded band structure of pure KNN.

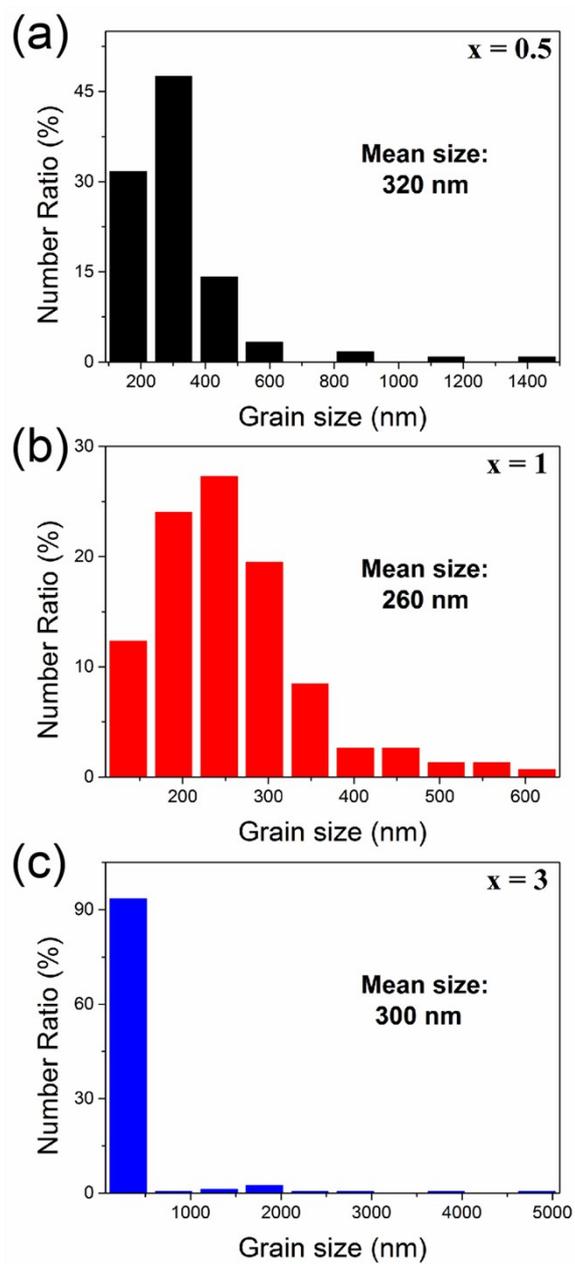


Fig. S3 The columnar maps of the grain size distribution and mean size of the KNN-Sm-x ceramics, (a) $x = 0.5$, (b) $x = 1$ and (c) $x = 3$.

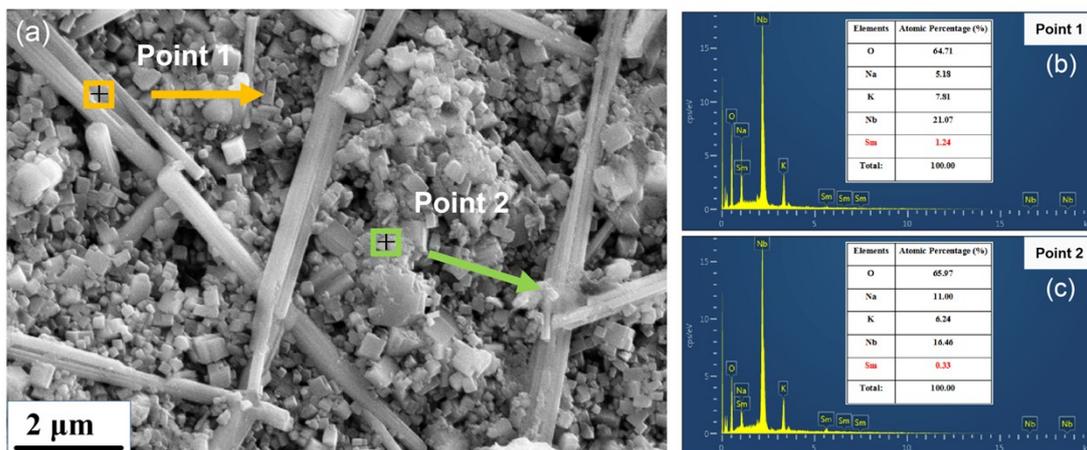


Fig. S4 (a) The EDS analysis from the SEM image of KNN-Sm-3, (b) and (c) are the element contents of different shaped grains for point 1 and point 2, respectively.

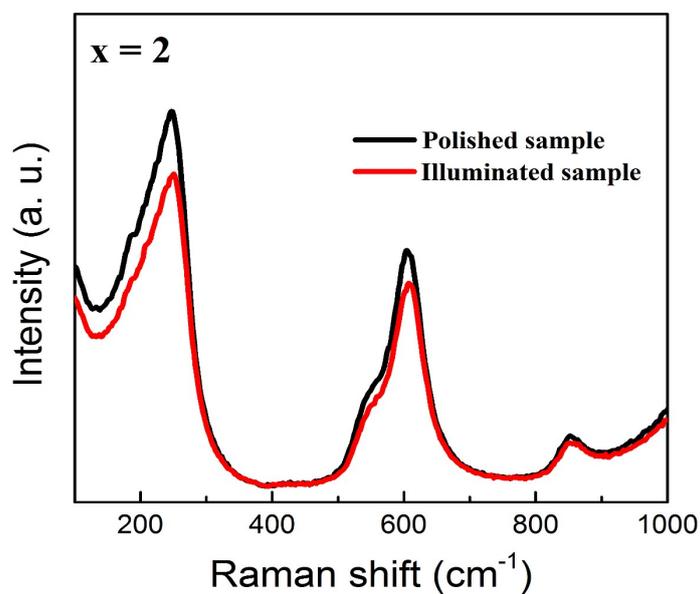


Fig. S5 Raman spectra of the polished KNN-Sm-x sample with $x = 2$ before and after illumination.

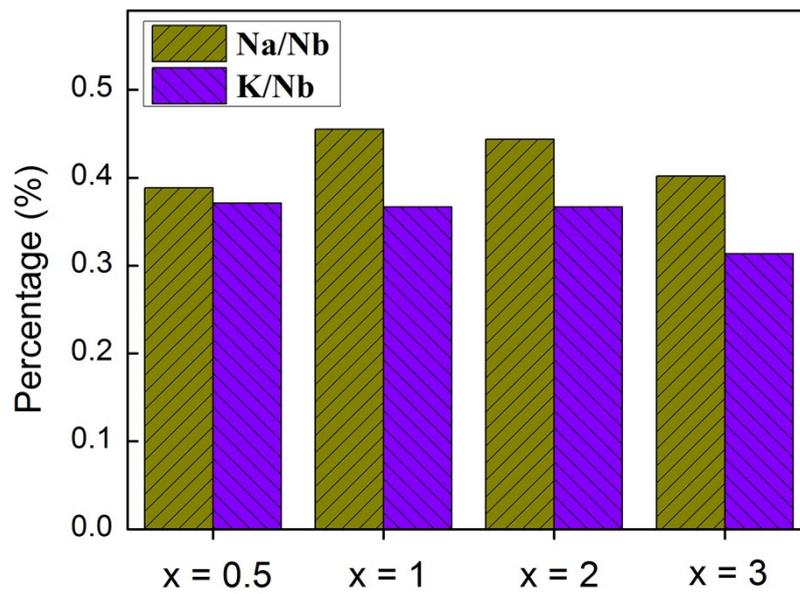


Fig. S6 The percentages of Na/Nb and K/Nb in the KNN-Sm-x ceramics from the EDS analysis based on the SEM image.