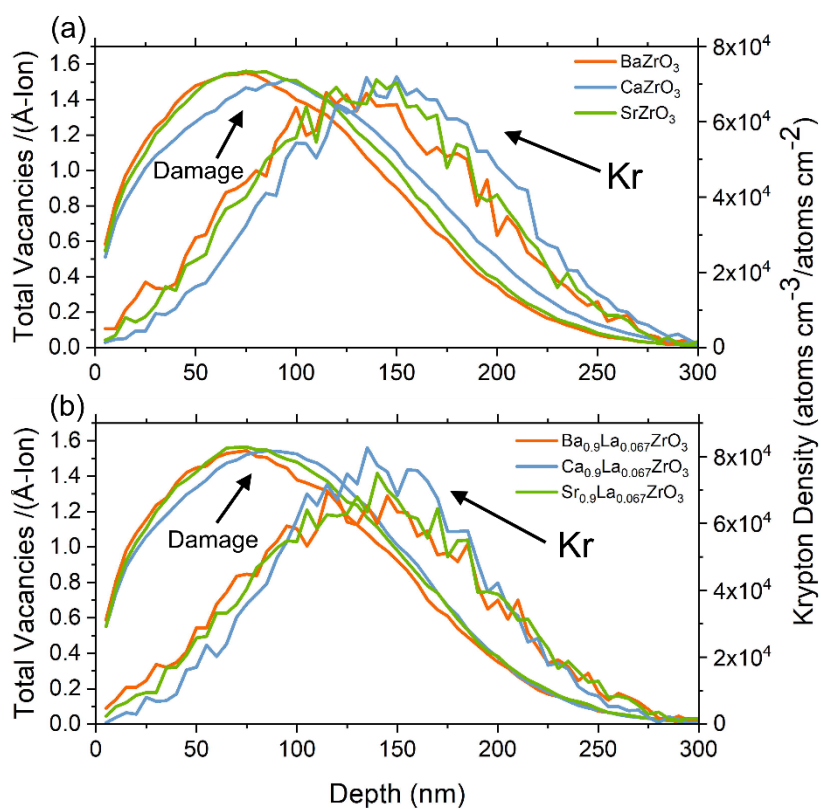
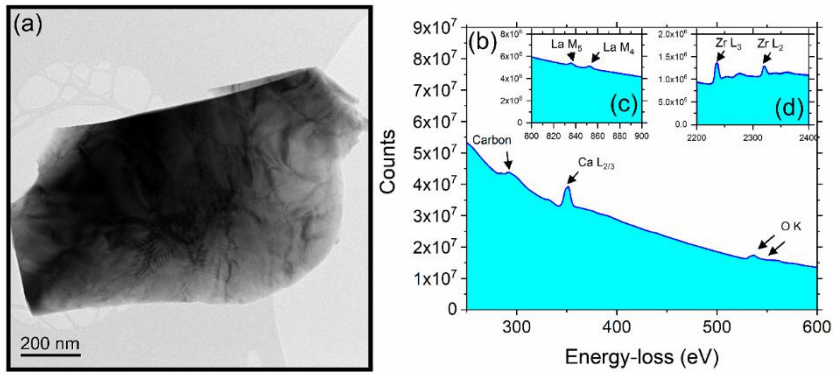


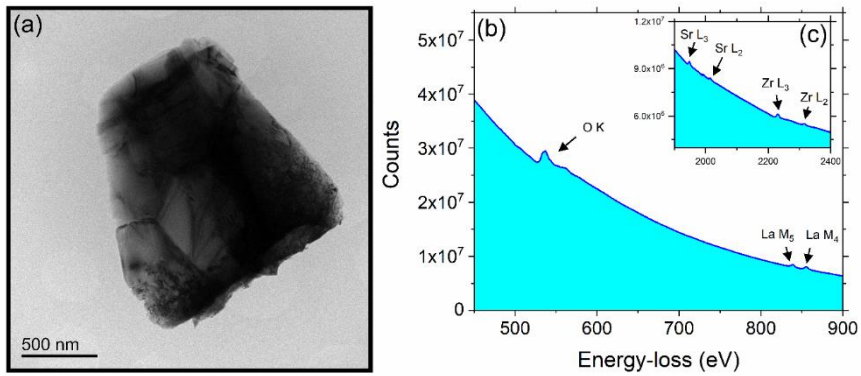
Supplementary Figure 1. XRD trace of the Si metal 640e NIST standard reference used for XRD calibration.



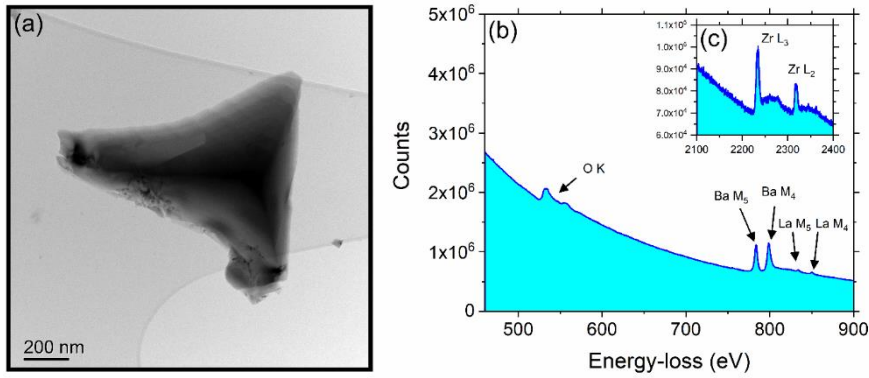
Supplementary Figure 2. SRIM profiles for (a) undoped and (b) doped $\text{Ba}_{1-x}\text{La}_x\text{ZrO}_3$, $\text{Sr}_{1-x}\text{La}_x\text{ZrO}_3$ and $\text{Ca}_{1-x}\text{La}_x\text{ZrO}_3$ samples.



Supplementary Figure 3. (a) TEM micrograph of a grain of $\text{Ca}_{0.9}\text{La}_{0.067}\text{ZrO}_3$ (b) EELS spectra of the 250-600 eV loss region with the O K-edge and Ca $L_{2/3}$ edges labelled (c) EELS spectra of the 800-900 eV loss region with the La $M_{4/5}$ edges labelled and (d) EELS spectra of the 2200-2400 eV loss region with the Zr $L_{2/3}$ edges labelled.



Supplementary Figure 4. (a) TEM micrograph of a grain of $\text{Sr}_{0.9}\text{La}_{0.067}\text{ZrO}_3$ (b) EELS spectra of the 450-900 eV loss region with the O K-edge and La $M_{4/5}$ edges labelled (c) EELS spectra of the 1900-2400 eV loss region, with Sr $L_{2/3}$ edges and Zr $L_{2/3}$ edges labelled.



Supplementary Figure 5. (a) TEM micrograph of a grain of $\text{Ba}_{0.8}\text{La}_{0.053}\text{ZrO}_3$ (b) EELS spectra of the 460-900 eV loss region with the O K-edge, Ba $M_{4/5}$ edges and La $M_{4/5}$ edges labelled (c) EELS spectra of the 2100-2400 eV loss region with the Zr $L_{2/3}$ edges labelled.