

Fig. S1. STEM-EELS spectra of Y and Zr  $L$ -edge peaks acquired at the interface and YSZ substrate  $\sim 50$  nm from the interface with SZY.

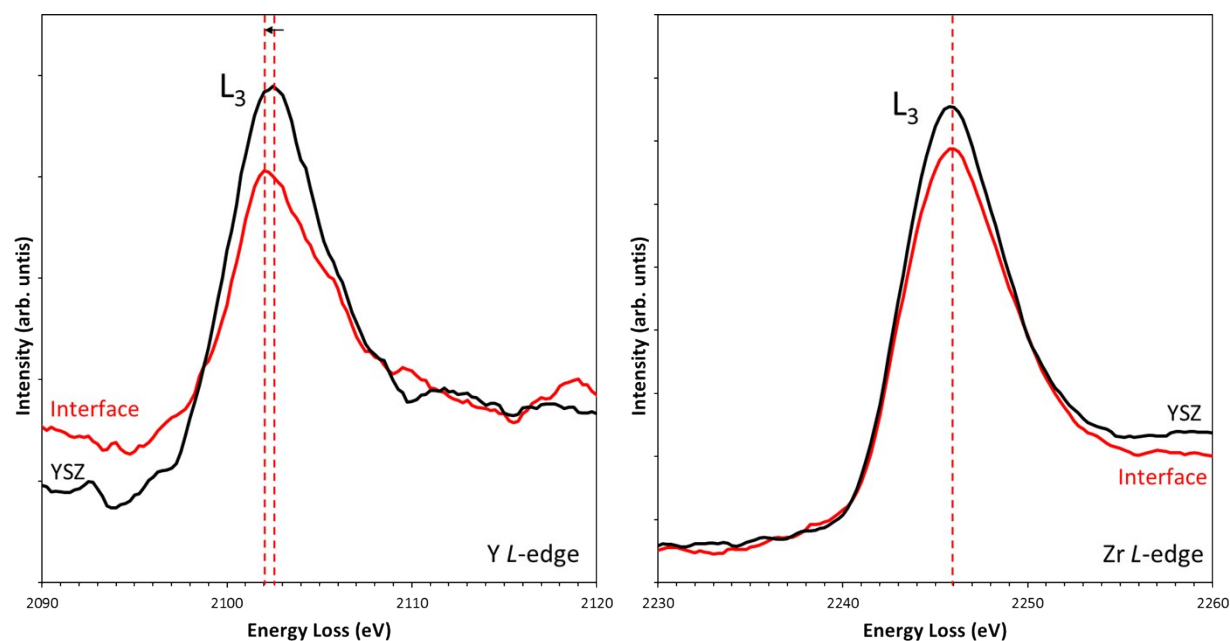


Fig. S2. Comparison of Y and Zr  $L_3$ -edge peaks acquired at the interface and YSZ substrate  $\sim 50$  nm from the interface with SZY. A significant decrease in intensity as well as a small shift ( $< \sim 1$  eV) towards lower energy loss is observed for the Y  $L$ -edge.