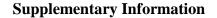
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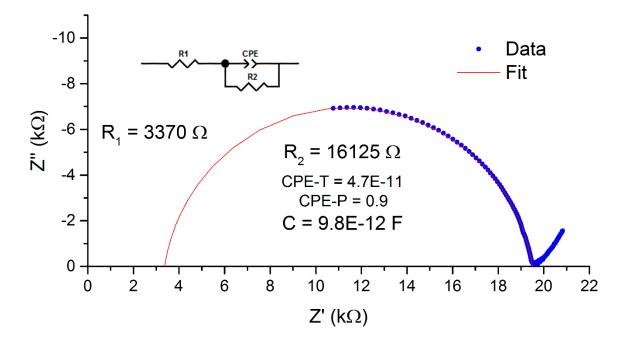
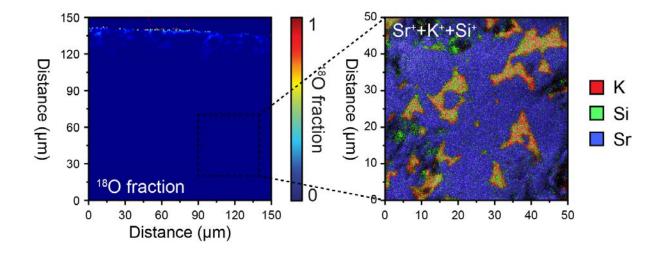


Figure S1. Example impedance spectra for the SKSG sample at ~ 415 °C.



**Figure S2.** Map of the <sup>18</sup>O isotopic fraction (left) in a cross-sectional area post exchange. The inhomogeneity of the tracer diffusion front can be seen to be on the same scale as the chemical inhomogeneity mapped on the right (taken from Figure 5).