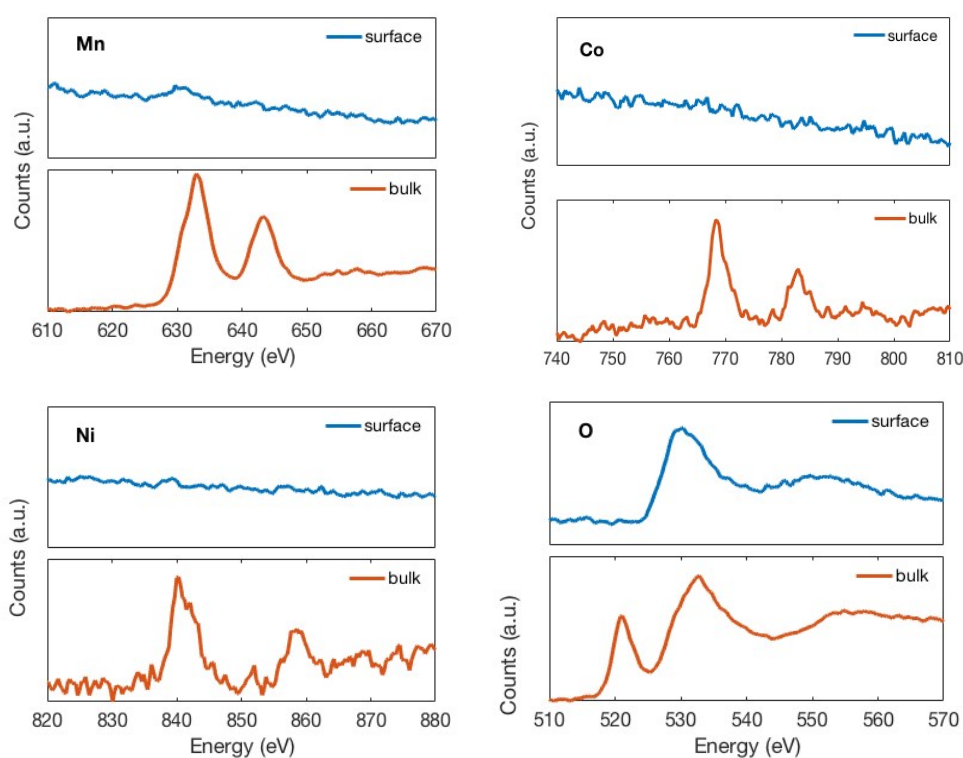


Supplementary Material

**Table S.1.** Chemical shifts determined by the white line ratio method.

Comparison	$L_3/L_2$ White Line Ratio Difference		
	Mn	Co	Ni
<i>Pristine control v pristine Si-doped</i>	-0.01	-0.19	-0.12
Pristine control v 4.4 V control	-0.07	-0.02	-1.08
Pristine control v 4.6 V control	-0.09	0.23	0.93
Pristine Si-doped v 4.4V Si-doped	0.03	0.82	-0.46
Pristine Si-doped v 4.6V Si-doped	0.03	0.44	-0.22



**Figure S.1.** EELS spectra of control HE-NMC charged to 4.4V from a pixel taken at the surface and in the bulk for a) manganese L-edge, b) cobalt L-edge, c) nickel L-edge, and d) oxygen K-edge.