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**Supporting information for article:**

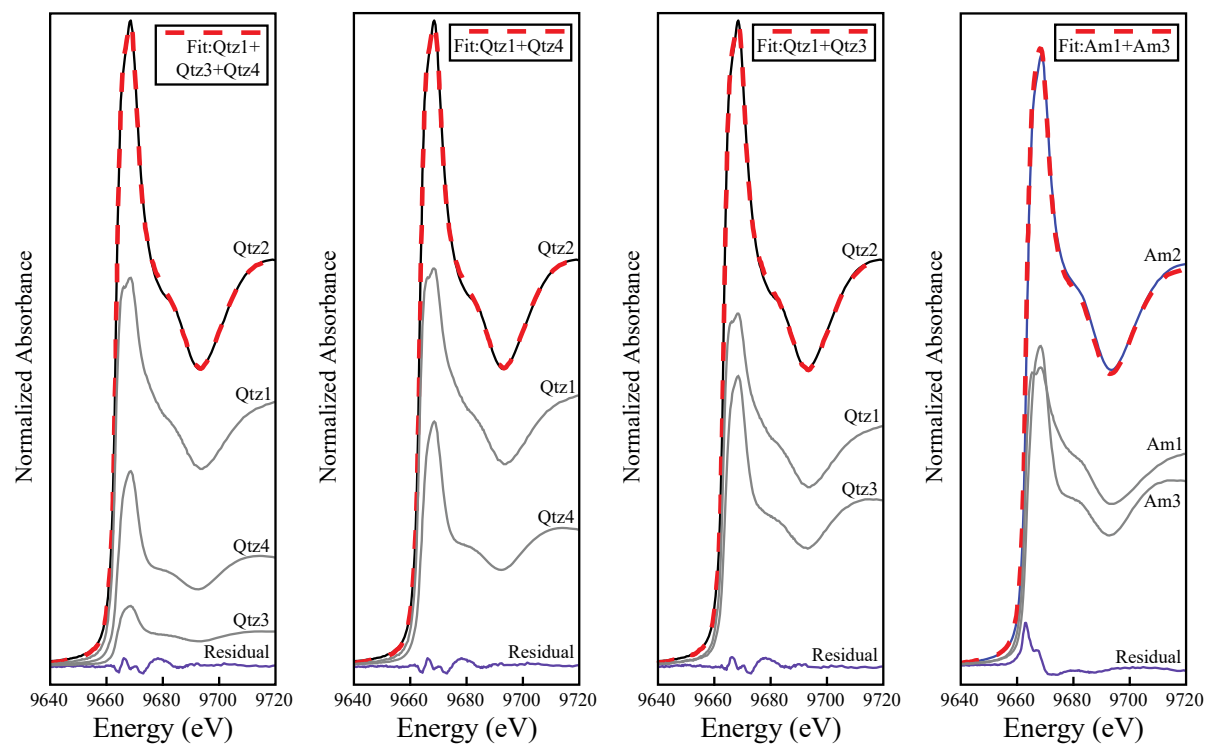
**XANES reflects coordination change and underlying surface disorder  
of zinc adsorbed to silica**

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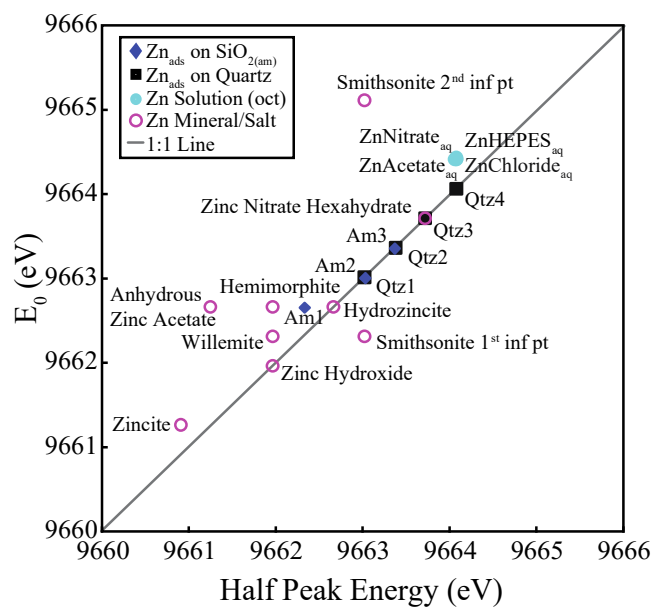
**Table S1** XANES Absorbance Peaks and Absorption Edge Energies

Sample	Normalized Peak Absorbance	Peak Energy (eV)	Half Peak Energy (eV)	E <sub>0</sub> (eV)
Anhydrous Zinc Acetate	1.17	9668.3	9661.3	9662.7
Zincite	1.21	9669.3	9660.9	9661.3
Willemite	1.21	9664.8	9662.0	9662.3
Hemimorphite	1.21	9664.4	9662.0	9662.7
Zinc Hydroxide	1.33	9667.9	9662.0	9662.0
Hydrozincite	1.42	9667.9	9662.7	9662.7
Smithsonite*	1.53	9666.5	9663.0	9662.3 9665.1
Zinc Nitrate Hexahydrate	1.62	9668.6	9663.7	9663.7
150 mM Zn Acetate	1.87	9668.3	9664.1	9664.4
150 mM Zn Nitrate	1.93	9668.3	9664.1	9664.4
150 mM Zn Chloride	1.98	9668.3	9664.1	9664.4
1 M Zn HEPES-buffer	2.02	9668.3	9664.1	9664.4
Am1	1.47	9668.3	9662.3	9662.7
Am2	1.59	9668.3	9663.0	9663.0
Am3	1.85	9668.3	9663.4	9663.4
Qtz1	1.54	9668.6	9663.0	9663.0
Qtz2	1.68	9668.6	9663.4	9663.4
Qtz3	1.89	9668.6	9663.7	9663.7
Qtz4	1.92	9668.6	9664.1	9664.1

\*K-edge possesses two distinct inflection points of similar intensity



**Figure S1** XANES Linear Combination Fitting (LCF) of Zn adsorbed to Quartz and SiO<sub>2(am)</sub>



**Figure S2** Absorption edge energies. Comparison of XANES absorption edge energies as defined by the energy at one-half the maximum absorbance of the *K*-edge (half peak energy) and the energy at the inflection point(s) along the *K*-edge ( $E_0$ ).