

SHORT COMMUNICATION

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Synchrotron-Radiation-Induced Oxidation of Selenite to Selenate in Coal-Derived Fly-Ash

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SUPPLEMENTARY INFORMATION

The trends displayed in Figure 1 of the paper for the variation of the Se XANES and derivative XANES spectra with time of exposure to the synchrotron beam could be reasonably duplicated by combining the corresponding spectra for potassium selenite (K_2SeO_3) and potassium selenate (K_2SeO_4). A suite of simulated spectra from 100% K_2SeO_3 to 100% K_2SeO_4 by 10% increments is shown in Figure S1 for both the Se XANES and derivative XANES spectra.

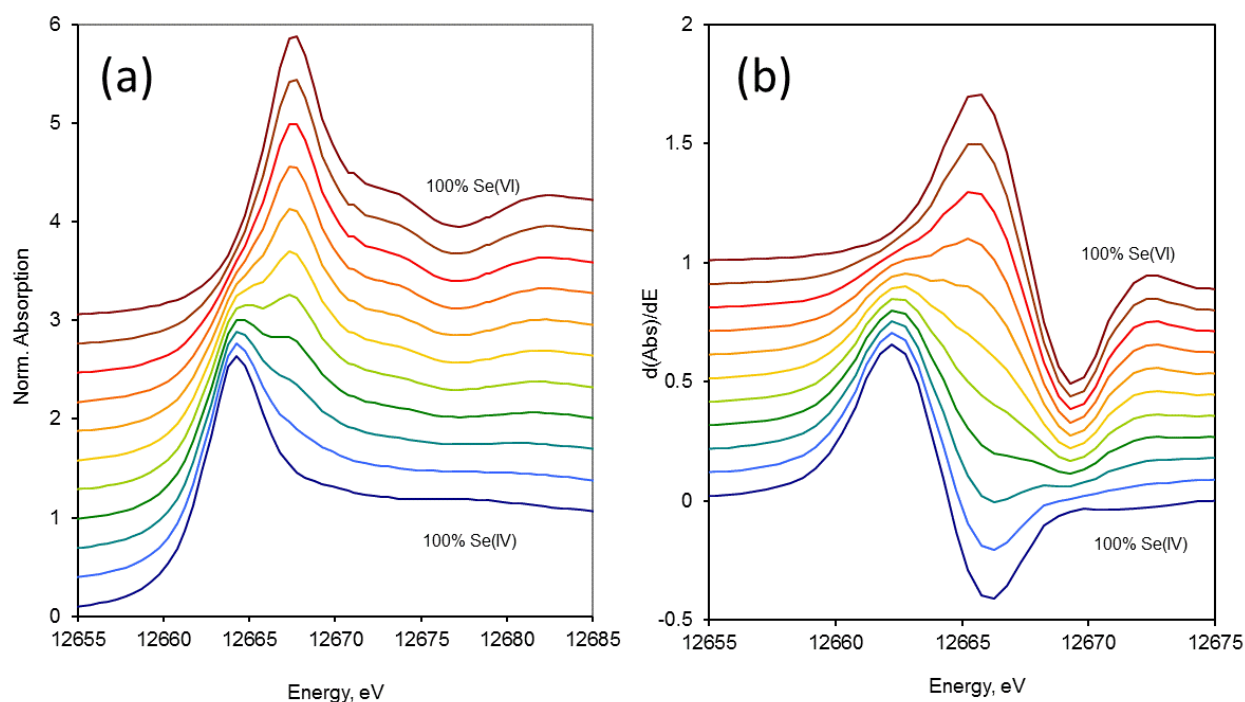


Figure S1: (a) Se XANES and (b) derivative XANES spectra simulated by linear combinations at 10% intervals of the spectra for K_2SeO_4 and K_2SeO_3 . Spectra are displaced vertically for ease of visualization.

Shown in Figure S2 are the same curves for the 100% selenite, 90% selenite 10% selenate, and 80% selenite and 20% selenate simulations, except that the spectra are not displaced so as to afford direct comparison with the spectra shown in Figure 1 of the paper.

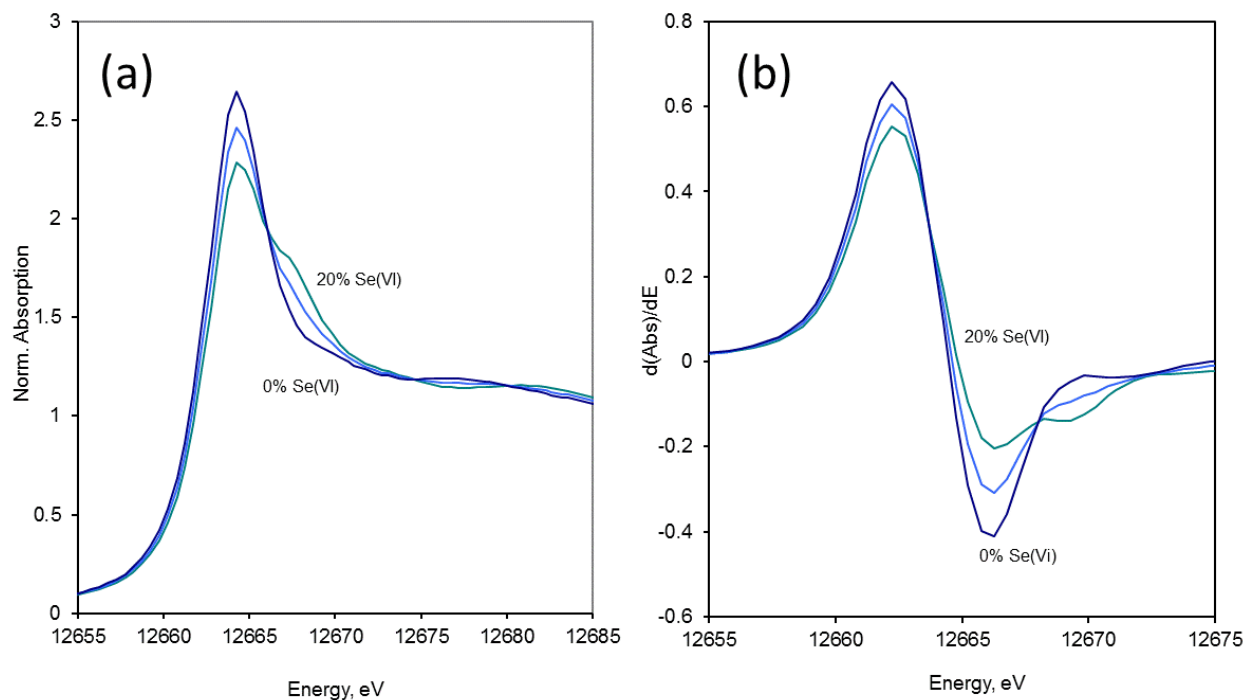


Figure S2: (a) Se XANES and (b) derivative XANES spectra simulated by linear combinations of the spectra for K_2SeO_4 and K_2SeO_3 for the following ratios of Se(IV): Se(VI) = 100%:0%, 90%:10%, and 80%:20%. The spectra have been drawn so as to most closely match how the spectra are displayed in Figure 1 of the paper.

By comparing Figure S2 and Figure 1, it can be concluded that the amount of selenate in the fly-ash sample formed from selenite as a result of 2 hours of exposure to the synchrotron beam does not exceed 20%.