

## Supporting Information

### Dissecting Local Atomic and Intermolecular Interactions of Transition-metal Ions in Solution with Selective X-ray Spectroscopy

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For this we assumed that the Auger decay rates are much larger than the fluorescence rates. In addition, this assumption is strictly valid only if the CK decay rate is zero. As CK decays are not included in both our calculations we used the CK yield from ref. 34 in the main paper to correct the calculated PFY spectra for the additional decay channels due to CK decays.