Supporting Information for

"Seasonal changes in Fe species and soluble Fe concentration in the atmosphere in the Northwest Pacific region based on the analysis of aerosols collected in Tsukuba, Japan"

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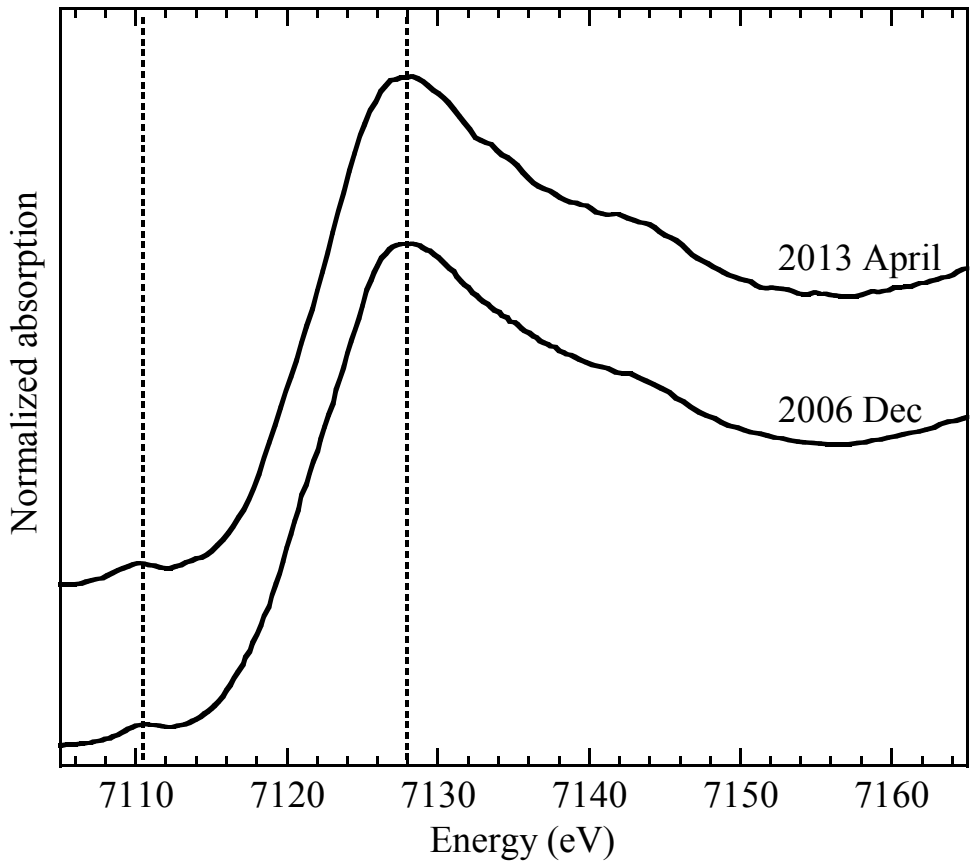


Figure S1. Iron K-edge XANES for the aerosol sample (February) in Dec. 2006 and May 2013.

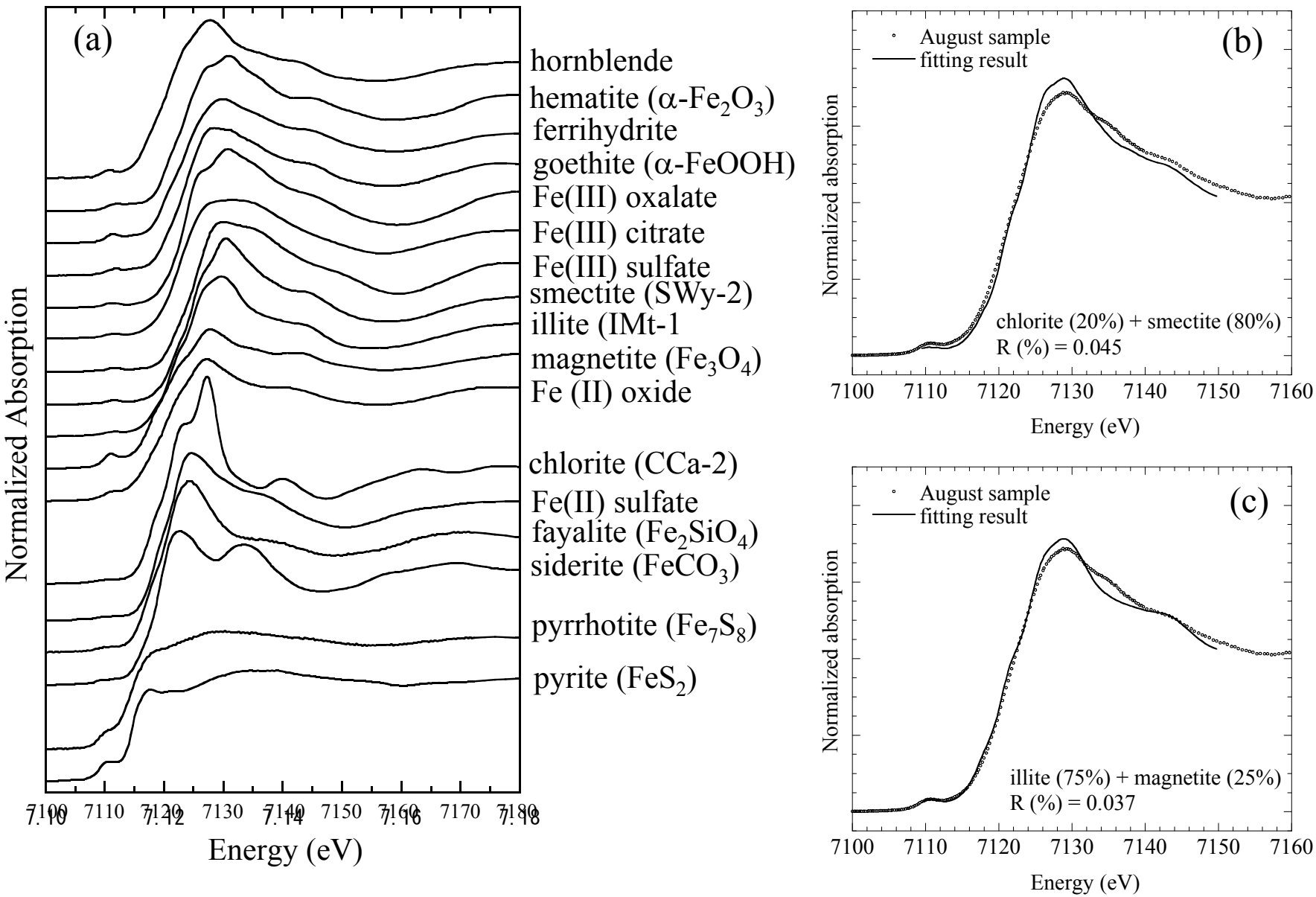


Figure S2. (a) Iron K-edge XANES for various reference materials. Fitting results of the spectrum of August sample by the LCF of (b) chlorite and smectite and (c) illite and magnetite are also shown.

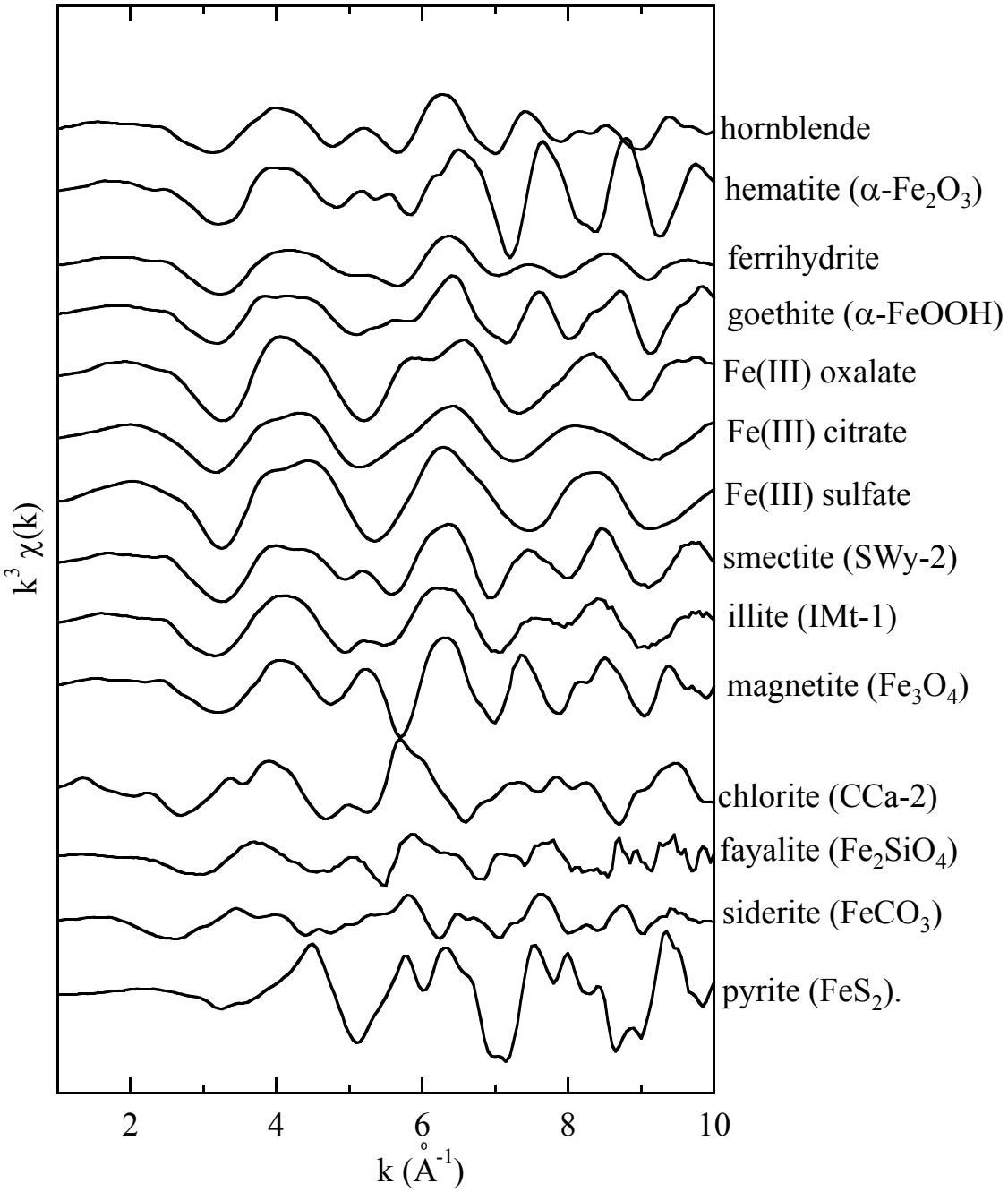
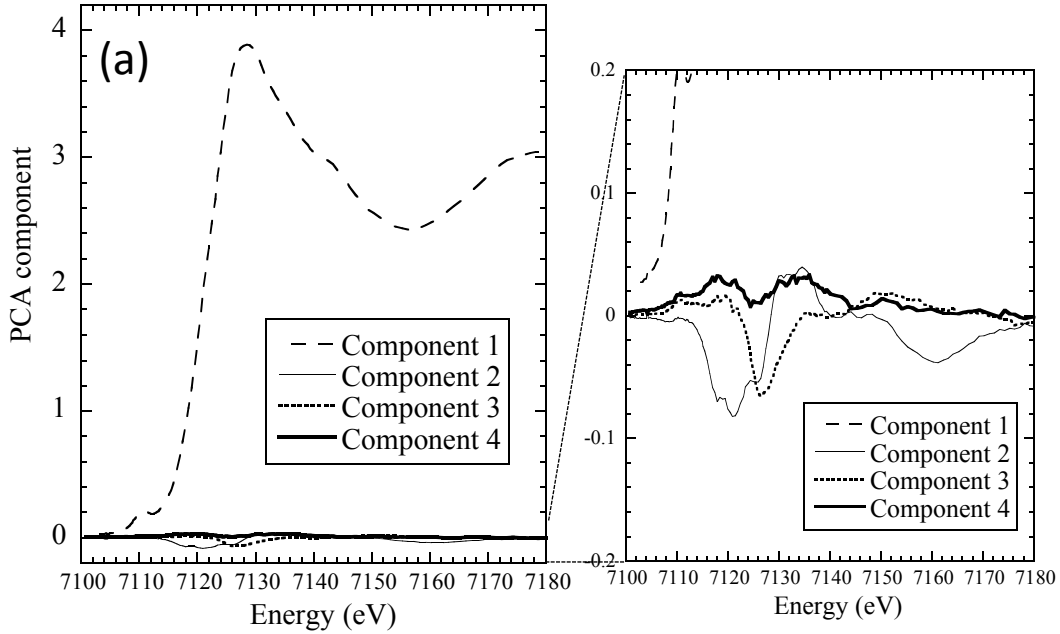


Figure S3. Iron K-edge EXAFS spectra of various reference materials.



Compo-nent	Eigen-values	Variance	Cumulative variance
1	8.995467	0.999496	0.999496
2	0.003051	0.000339	0.999835
3	0.000950	0.000106	0.999941
4	0.000407	0.000045	0.999986

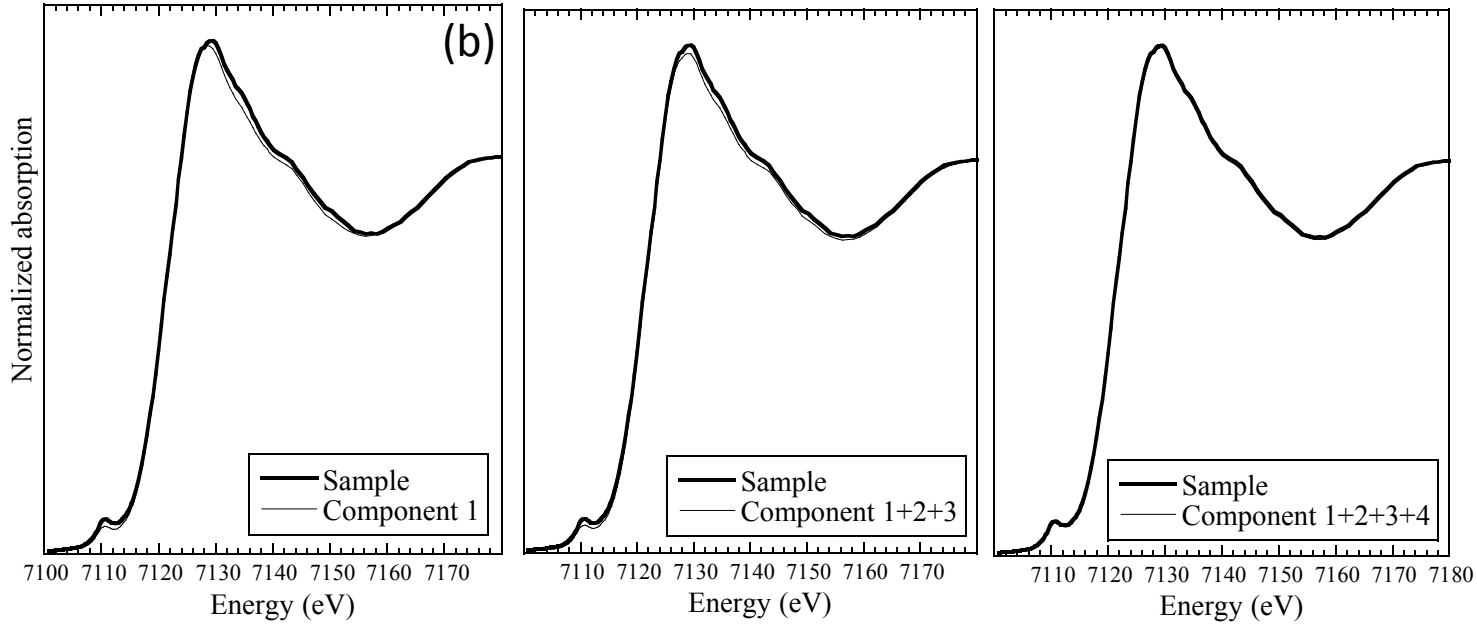


Figure S4. (a) Results of PCA analysis for Fe K-edge XANES for various months and (b) fitting of the spectrum in July by component 1, component 1+2+3, and component 1+2+3+4.

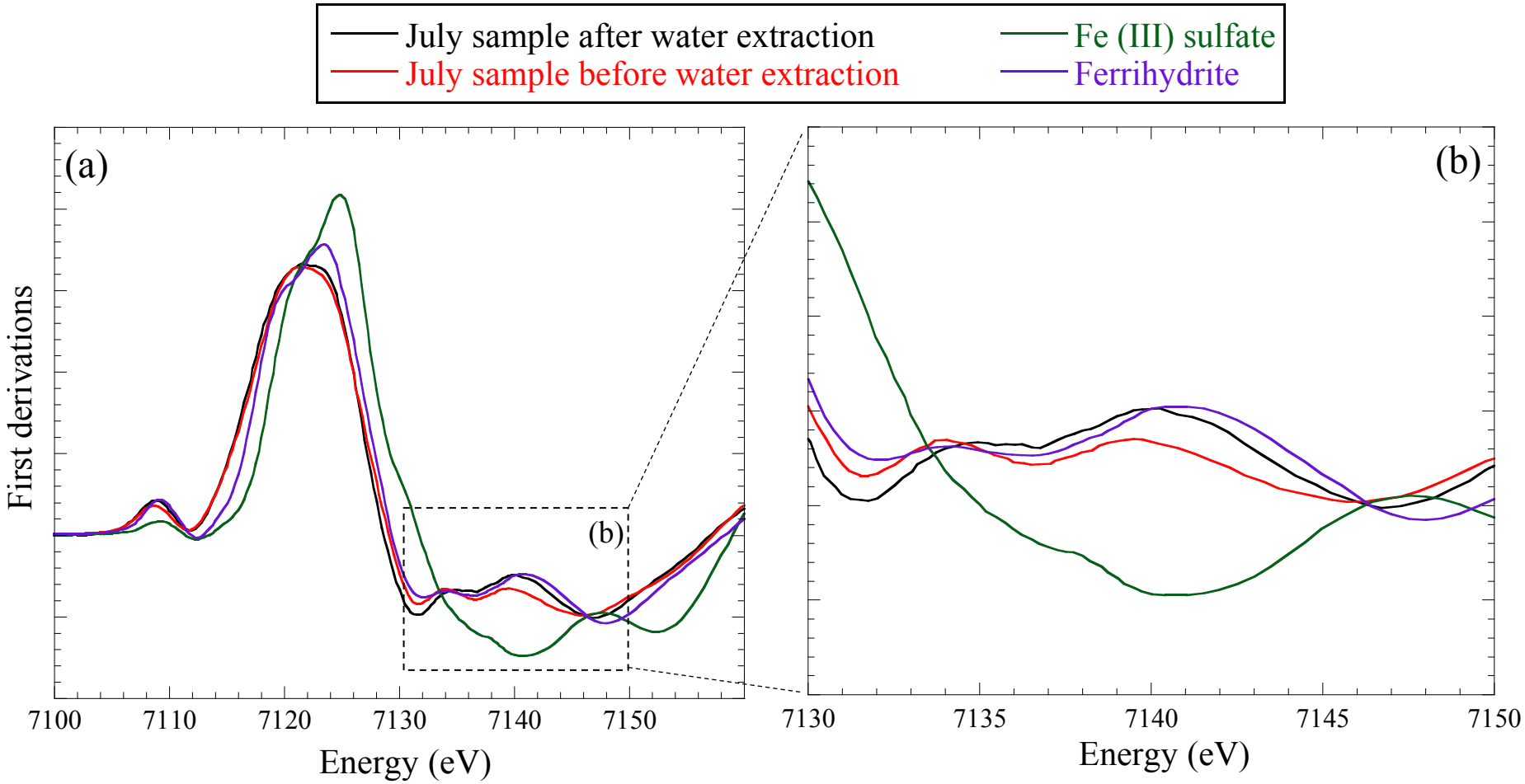


Figure S5. Variation of first derivative spectra of the sample in July before and after the water extraction treatment . Spectra of Fe(III) sulfate and ferrihydrite are also shown.

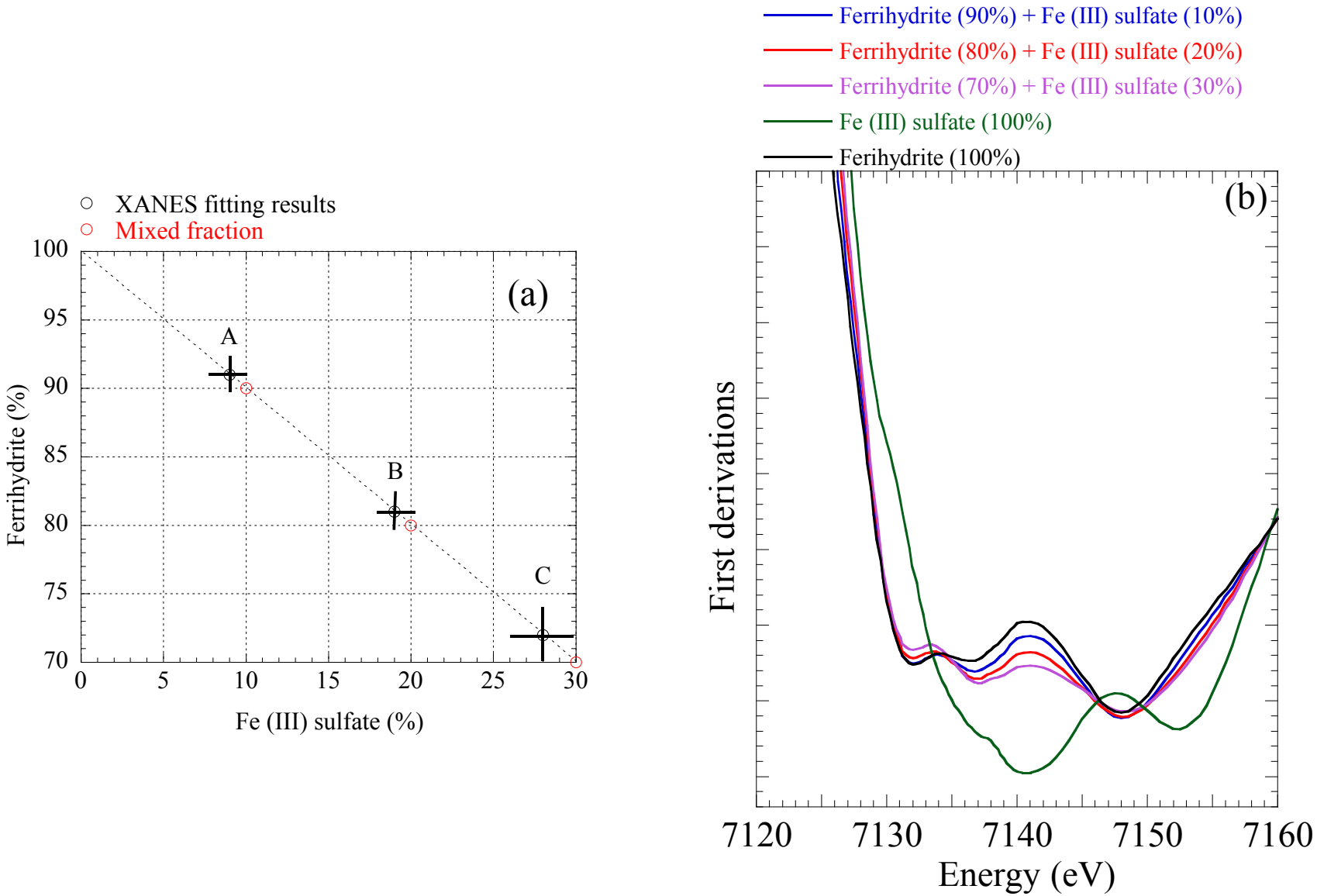


Figure S6. Variation of XANES spectra and first derivative spectra for the mixtures of ferrihydrite and Fe(III) sulfate with their calculated fractions determined by the LCF of the spectra to explain the variation of the spectra in Fig. S3. (a) Comparison of fitting results with the mixing ratio to prepare the samples; (b) variation of the first derivative spectra.

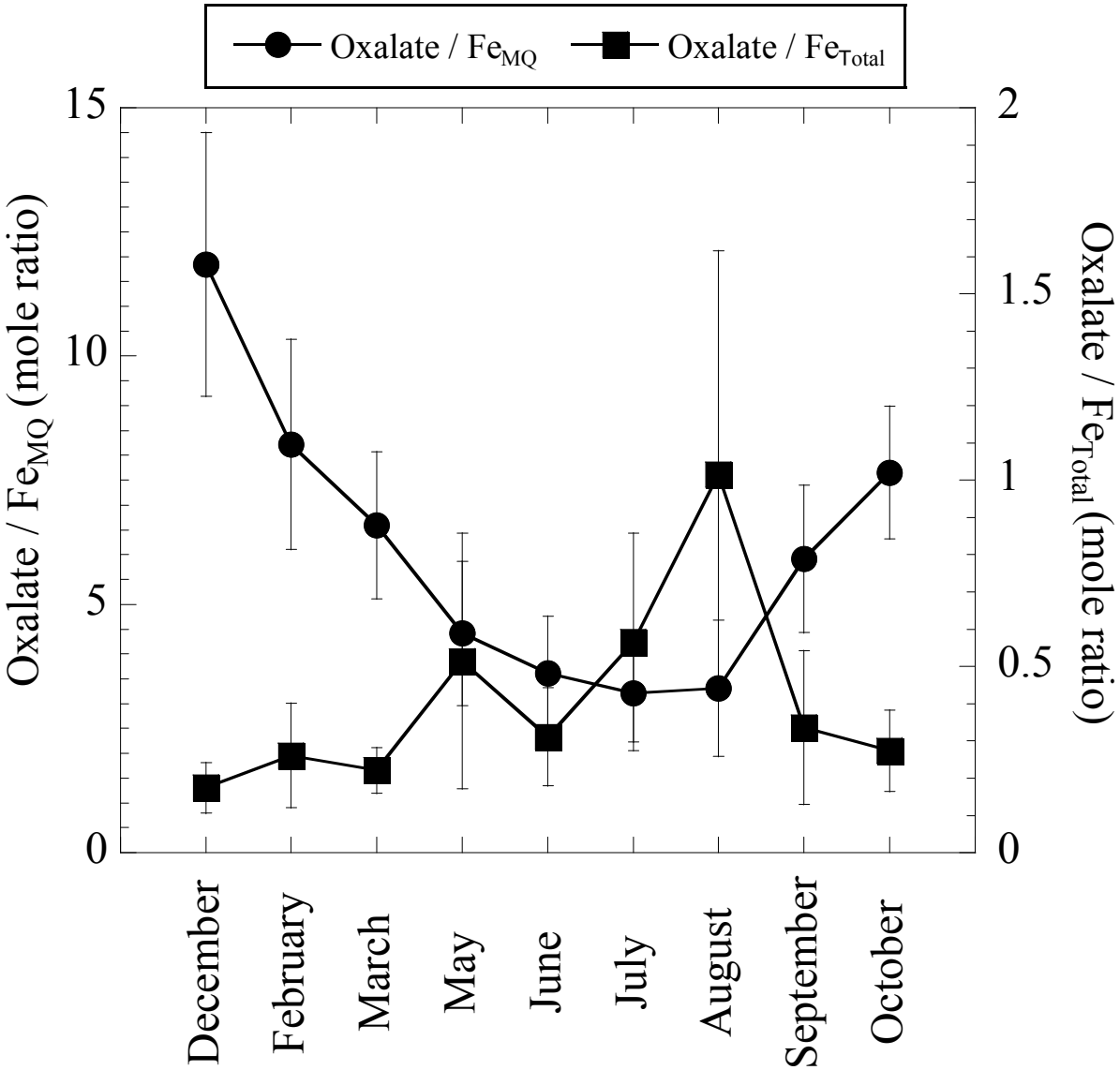


Figure S7. Oxalate/Fe$_{MQ}$ and oxalate/Fe$_{Total}$ ratios in various months.

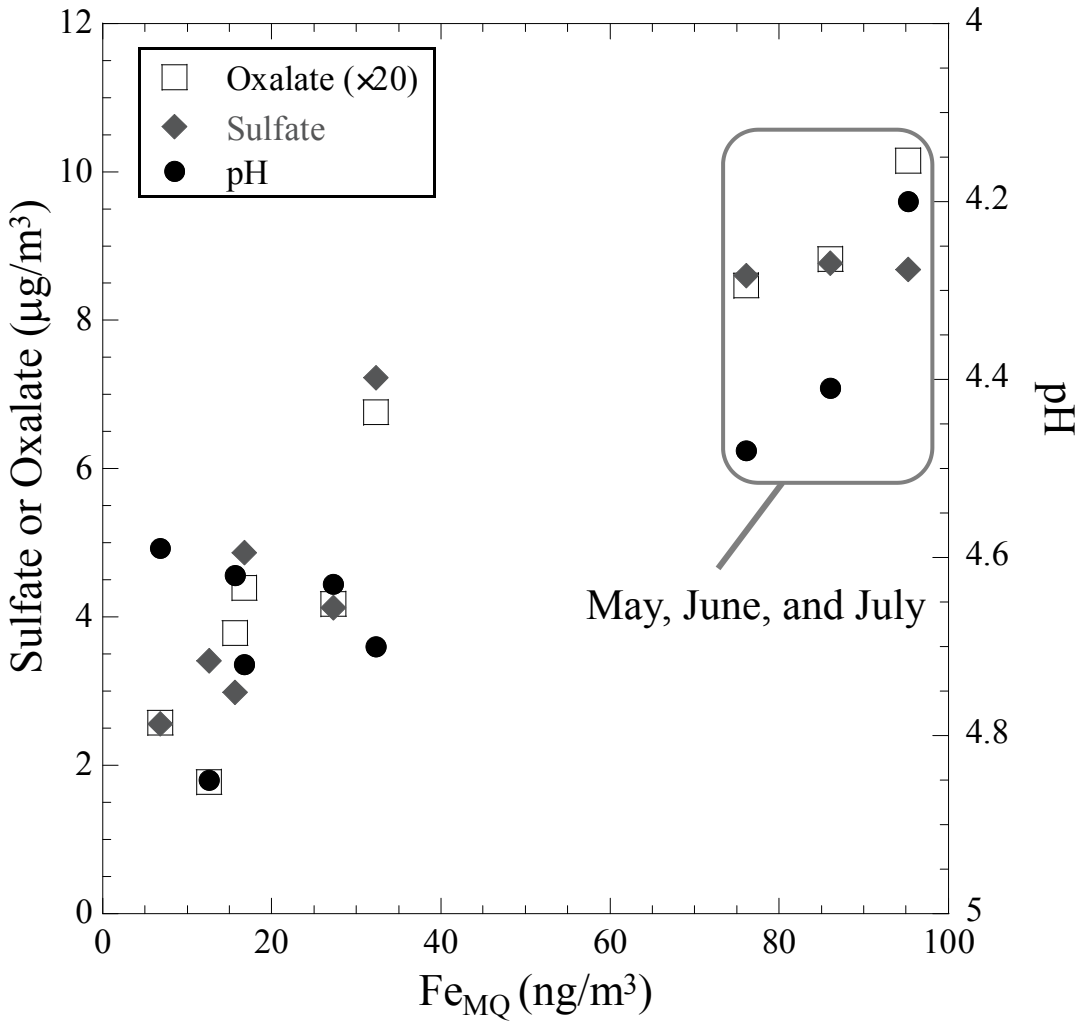
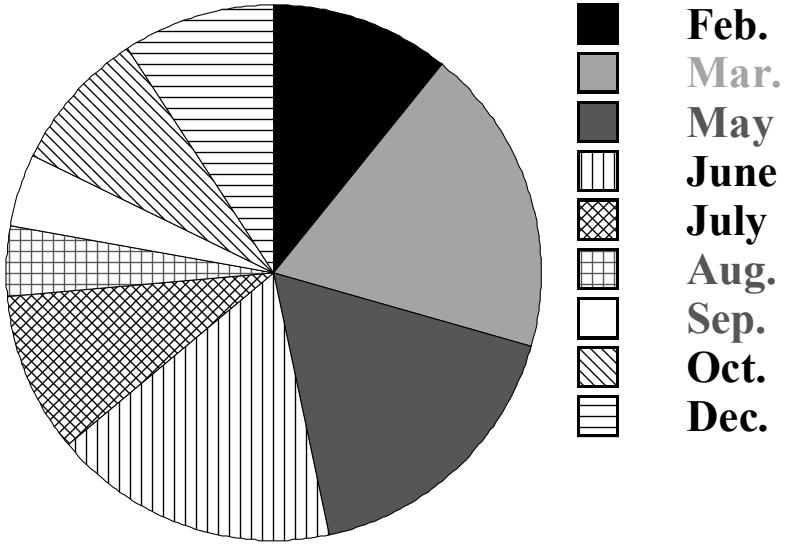
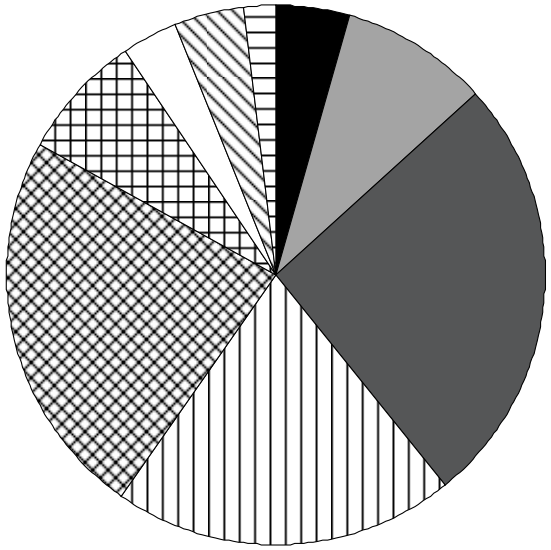


Figure S8. Relationship between sulfate, oxalate, and pH against Fe_{MQ}.



(a) [Fe_{Total}] for the year, by month



(b) [Fe_{SW}] for the year, by month

Figure S9. Contributions of Fe in each month relative to total Fe in all the months examined for (a) [Fe_{Total}] and (b) [Fe_{SW}].