Support information file

Nanobeam-scanning X-ray Fluorescence Microscopy Reveals the Elemental Composition of Dense Intracellular Bodies in Biomineralizing Coccolithophores

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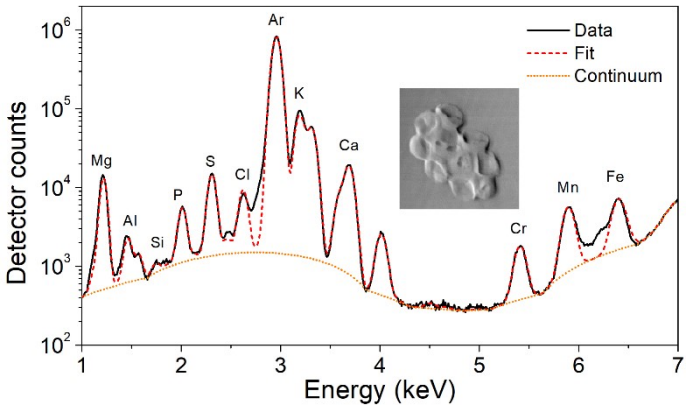

Figure S1. Fitted X-ray fluorescence (XRF) spectrum of dried EDTA-treated *G. huxleyi* cells. Inset image shows reference to dataset.

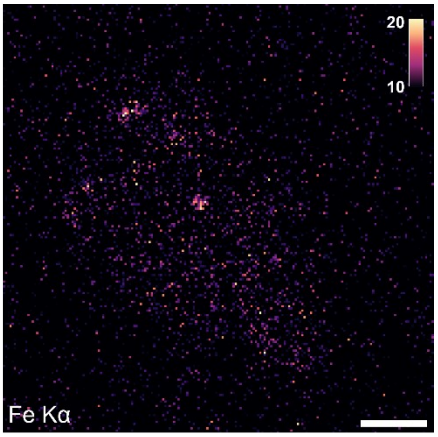

Figure S2. Fe Kα XRF map of EDTA-treated *G. huxleyi* in dried condition. Intensity scale shown as XRF counts. Scale bar 3 µm.

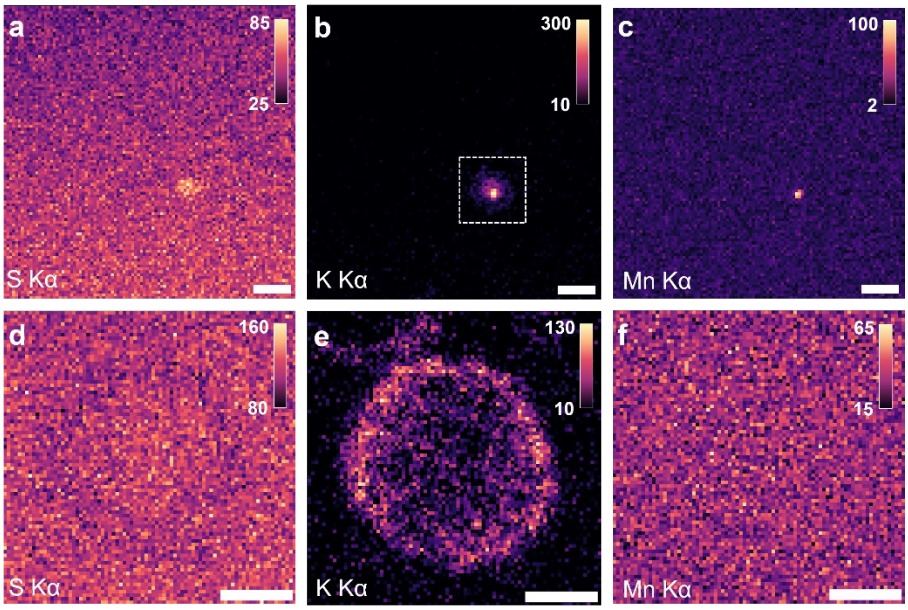

Figure S3. A coccosphere-bearing *G. huxleyi* cell in sea water medium measured at 300 nm scanning resolution shown with (a) S Kα XRF, (b) K Kα XRF, and (c) Mn Kα XRF maps. The same cell was reimaged at 100 nm scanning resolution and longer exposure time (dotted line in b shows the approximate region), shown with (d) S Kα XRF, (e) K Kα XRF and (f) Mn Kα XRF maps. Intensity scale shown as XRF counts. Scale bars (a-c) 5 µm and (d-f) 2 µm.

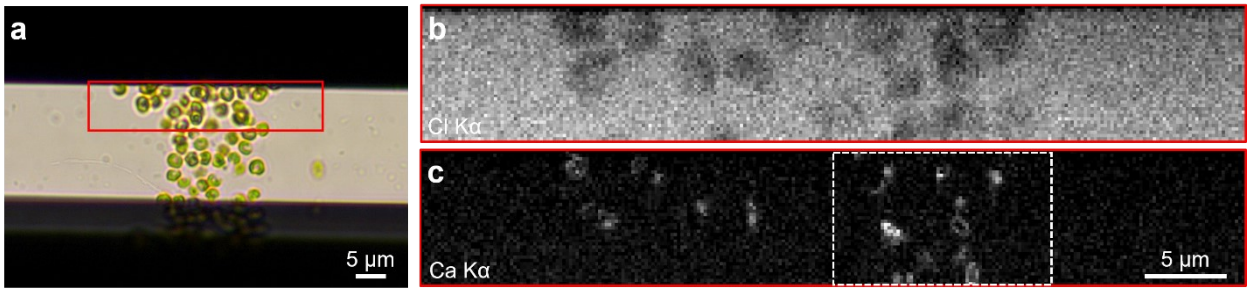

Figure S4. (a) Optical microscopy image of EDTA-treated *G. huxleyi* loaded into liquid cell device before installing the device for X-ray measurement. The red box indicates the approximate region first mapped with XRF at low resolution. Note that some cells may have moved during the transport and set up of the liquid cell device. Low resolution scanning of loaded *G. huxleyi* cells shown with (b) Cl Kα XRF and (c) Ca Kα XRF maps. The white dotted line in (c) indicates the region mapped with higher resolution in Figure 8.

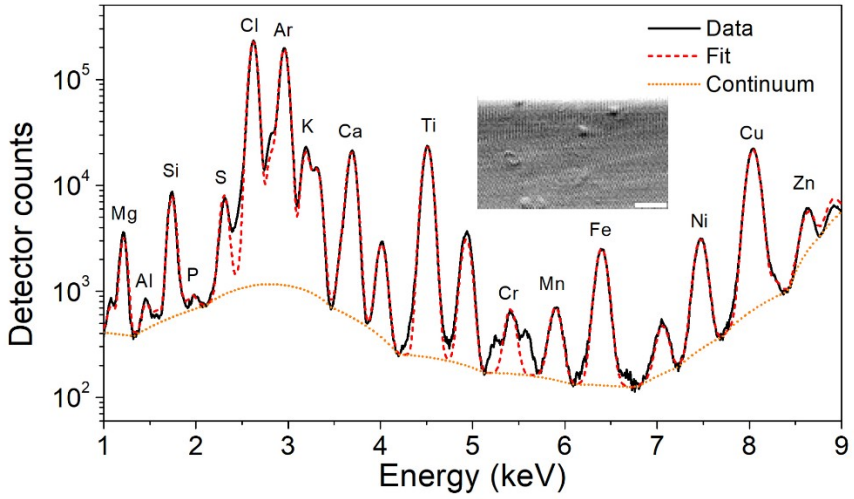

Figure S5. Fitted XRF spectrum of EDTA-treated *G. huxleyi* in liquid cell. Inset image shows reference to dataset.

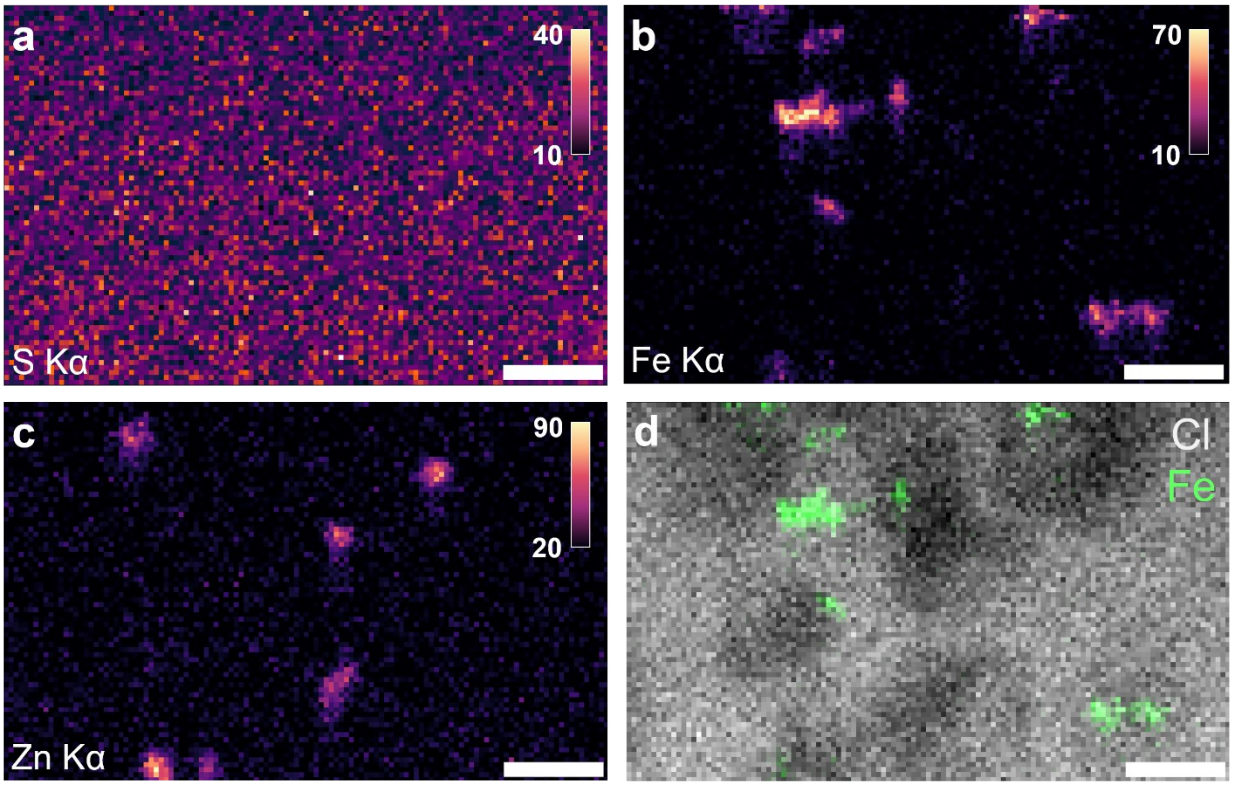

Figure S6. (a) S Kα XRF, (b) Fe Kα XRF, (c) Zn Kα XRF and (d) Cl and Fe composite map of EDTA-treated *G. huxleyi* cells in seawater medium. Intensity scale shown as XRF counts. Scale bar 2 µm.