SUPPLEMENTARY INFORMATION

Spatially-resolved localization and chemical speciation of nickel and zinc in *Noccaea tymphaea* and *Bornmuellera emarginata*

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Supplementary Figure 1. Elemental μ XRF maps of fresh *Noccaea tymphaea* whole mature leaf. The maps measure 6.24 × 8.2 mm (312 × 410 pixels). The elemental image was acquired in 20- μ m step size with 15 ms dwell per pixel, 11.0 keV, incident beam, showing K, Ca, Ni and Zn maps.



Supplementary Figure 2. Elemental μ XRF maps of fresh *Noccaea tymphaea* leaf hand cut section. The maps measure 4.45×0.91 mm (890 × 181 pixels). The elemental image was acquired in 5- μ m step size with 12 ms dwell per pixel, 11.0 keV, incident beam, showing K, Ca, Ni and Zn maps.



Supplementary Figure 3. Elemental μ XRF maps of *Leptoplax emarginata* intact silique. The maps measure 7.04 × 9.96 mm (352 × 498 pixels). The elemental image was acquired in 20- μ m step size with 10 ms dwell per pixel, 11.0 keV, incident beam, showing K, Ca, Ni and Zn maps.



Supplementary Figure 4. Elemental μ XRF maps of *Leptoplax emarginata* intact silique. The maps measure $10.66 \times 7.32 \text{ mm} (533 \times 366 \text{ pixels})$. The elemental image was acquired in 20- μ m step size with 10 ms dwell per pixel, 11.0 keV, incident beam, showing K, Ca, Ni and Zn maps.



Supplementary Figure 5. Elemental μ XRF maps of *Noccaea tymphaea* intact whole seed. The maps measure 1.84×1.27 mm (1148×795 pixels). The elemental image was acquired in 1.6- μ m step size with 20 ms dwell per pixel, 11.0 keV, incident beam, showing K, Ca, Ni and Zn maps.



Supplementary Figure 6. Elemental μ XRF maps of *Noccaea tymphaea* intact silique. The maps measure $5.82 \times 10.68 \text{ mm} (291 \times 534 \text{ pixels})$. The elemental image was acquired in 20- μ m step size with 10 ms dwell per pixel, 11.0 keV, incident beam, showing K, Ca, Ni and Zn maps.



Supplementary Figure 7. Single-slice tomography μ XRF maps of *Noccaea tymphaea* intact whole seed showing Compton, Fe, Ni and Zn maps. The virtual slices have a pixel size of 2 μ m.



Supplementary Figure 8. Multi-slice tomography μ XRF maps of *Noccaea tymphaea* intact whole seed showing Ni maps. The virtual slices have a pixel size of 2 μ m.



Supplementary Figure 9. Multi-slice tomography μ XRF maps of *Noccaea tymphaea* intact whole seed showing Zn maps. The virtual slices have a pixel size of 2 μ m.