

Supplementary Materials: A Multi-Analytical Protocol for Decision Making to Study Copper Alloy Artefacts from Underwater Excavations and Plan Their Conservation

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SI 1. Evaluation of the elemental composition by pXRF, μ XRF and SEM-EDS



Figure S1. Brass trumpet from the Rooswijk shipwreck: (a) rim and bell; (b) pipe; and (c) beak.

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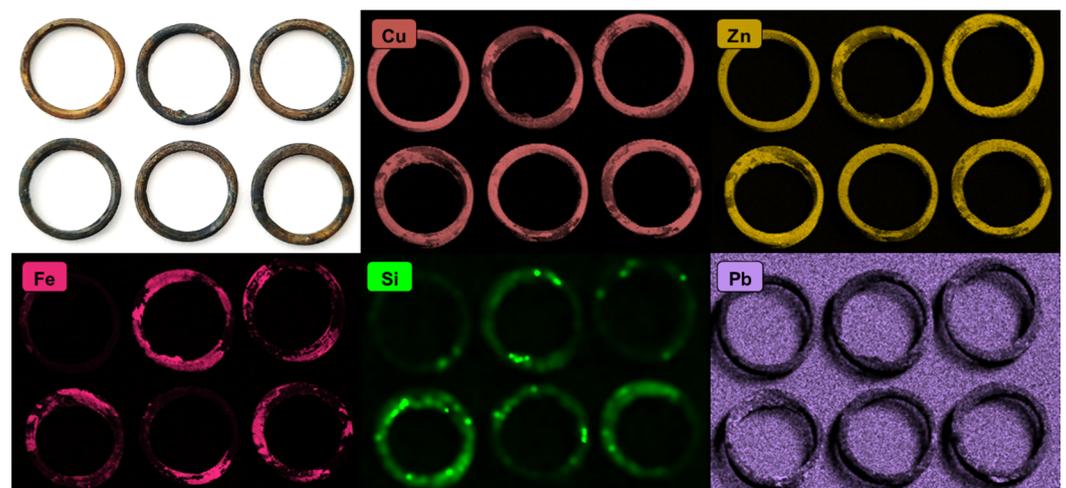


Figure S2. Copper alloy rings from the Rooswijk shipwreck (top left) and μ XRF elemental maps showing the main elements of the alloy.

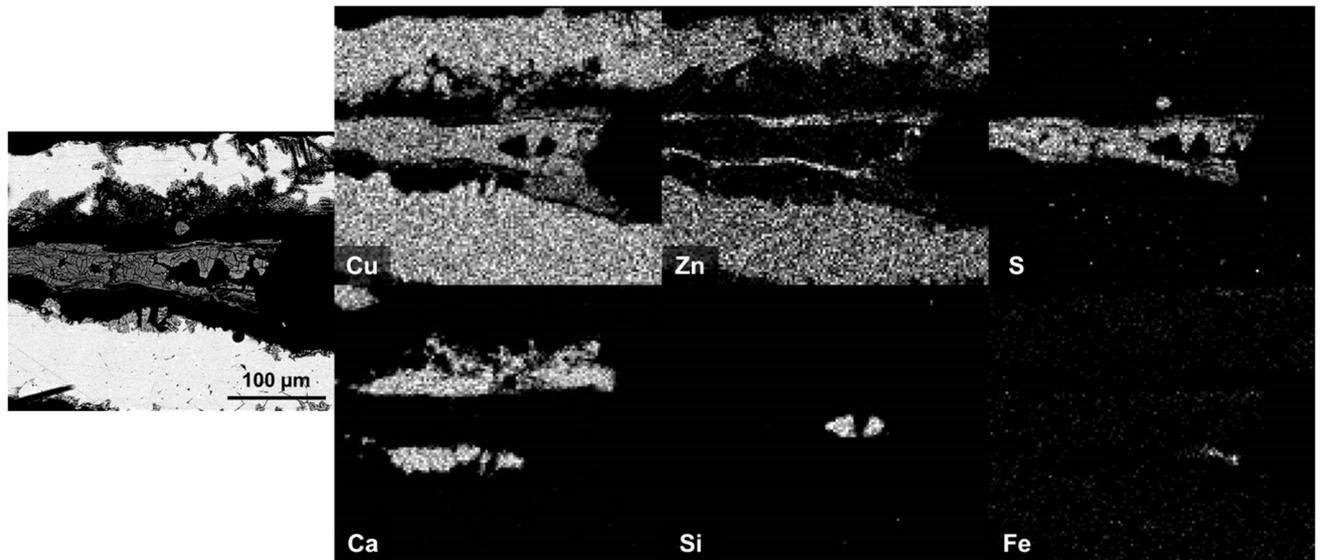


Figure S3. SEM image (BSE detector) (on the left) and elemental maps of a cross-section from a sample collected from the bell of a trumpet.

Table S1. Chemical composition (pXRF, g/100g, normalised) of different parts of a trumpet (bd = below detection).

Part	Cu	Zn	Pb	Fe	Ni	As	Ag
Rim	80 ± 5	20 ± 6	0.30 ± 0.10	0.20 ± 0.10	0.10 ± 0.10	0.10 ± 0.00	bd
Bell	76 ± 1	23 ± 1	0.70 ± 0.00	0.30 ± 0.10	0.20 ± 0.00	0.10 ± 0.00	bd
Pipe	75 ± 9	24 ± 9	0.50 ± 0.10	0.20 ± 0.00	0.20 ± 0.10	0.10 ± 0.00	bd
Beak	66 ± 7	31 ± 4	2.9 ± 1.2	0.30 ± 0.10	0.10 ± 0.00	0.20 ± 0.10	0.10 ± 0.00

SI 2. Characterisation of corrosion layers and surface patina by FTIR spectroscopy and XRD

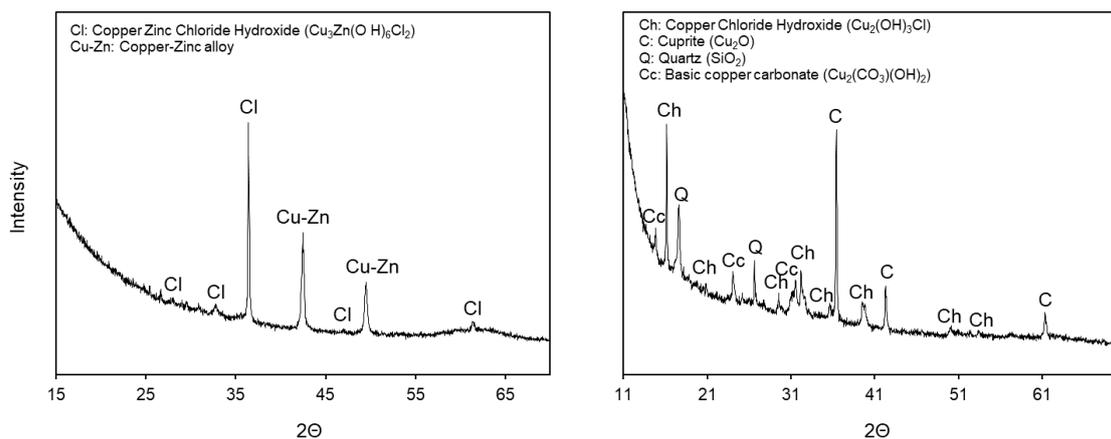


Figure S4. XRD spectra of green patina on a copper alloy thimble from the Rooswijk before desalination, with diffraction peaks indicating the presence of several corrosion products.