

Supporting Information

Elemental analysis of air-sensitive frozen molten salt samples using an inert transfer chamber for LIBS/LA-ICP-TOF-MS analysis

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Figures: 6

Tables: 0

Summary of Electrochemical Tests

1. temperature: 506 \pm 5° C
2. salt volume: 35 \pm 0.006 g
3. electrode areas:
 - a. Working electrode: 126 \pm 18 mm²
 - b. Counter electrode: ~92.2 mm²
4. potential ranges:
 - a. LSV
 - i. Sweep start: Open Circuit Potential
 - ii. Sweep length: -0.2 V to 0.3 V
 - b. EIS
 - i. Set potential to Open Circuit Potential
 - ii. Limit potential = \pm 10 V
 - iii. Sinusoidal amplitude: 8 mV

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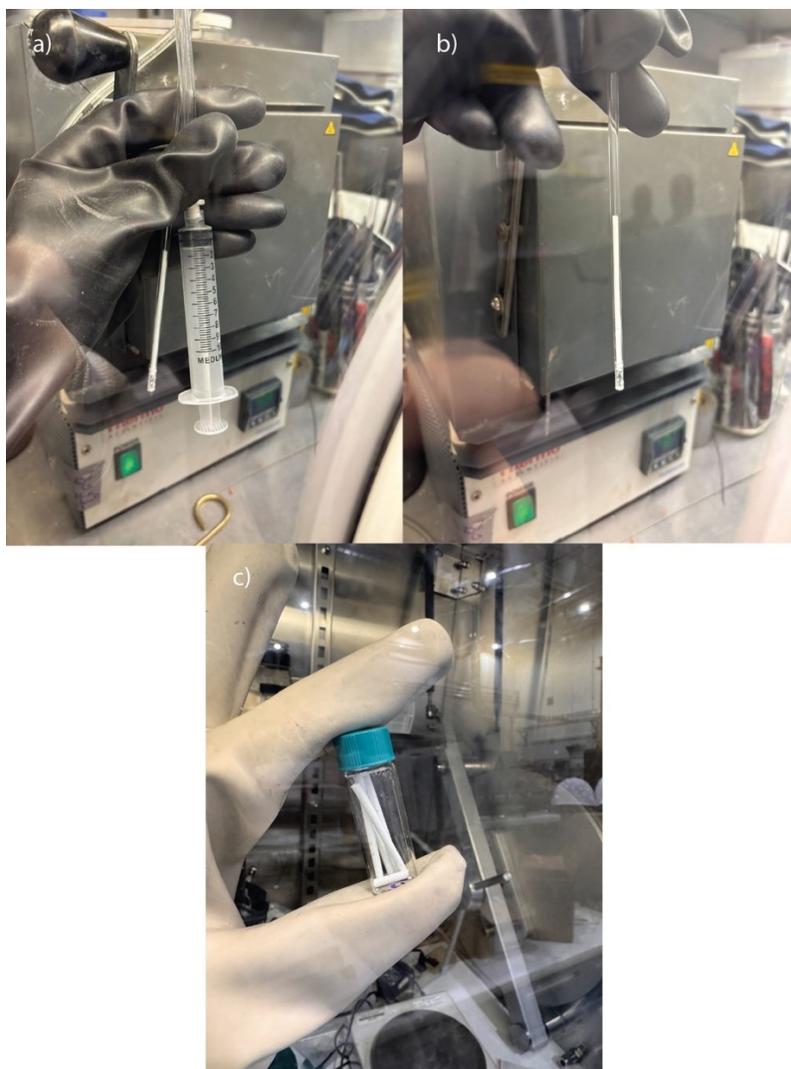


Figure S1. Example salt ingot formation in which (a) shows the syringe and glass tube used for salt withdrawal, (b) shows the frozen salt ingot in the glass tube, and (c) shows the vial of collected salt samples. The entire process was completed within an inert glovebox.



Figure S2. (left) National Institute of Standards and Technology 610 glass and (right) salt samples on ablation tray being loaded within an inert glovebox. Visible dark precipitates are shown in the lower test samples.

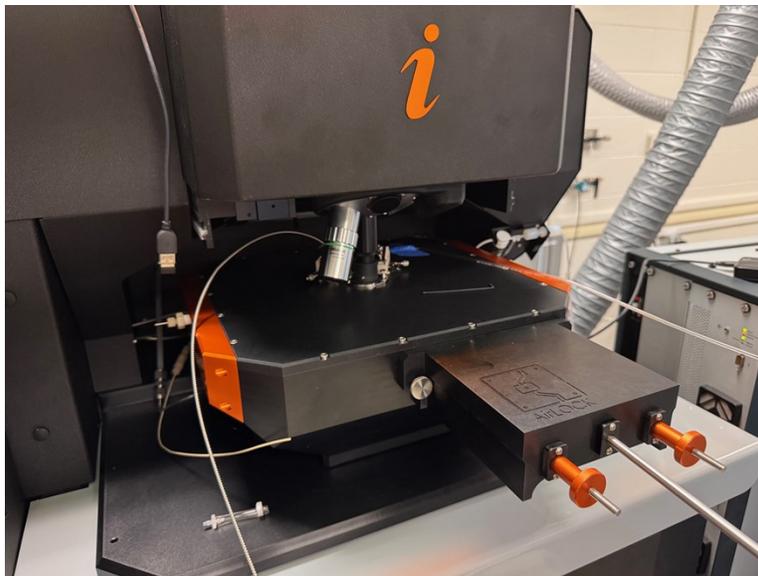


Figure S3. AirLOCK transfer system loaded onto the ImageGEO193 laser ablation two-volume ablation cell.

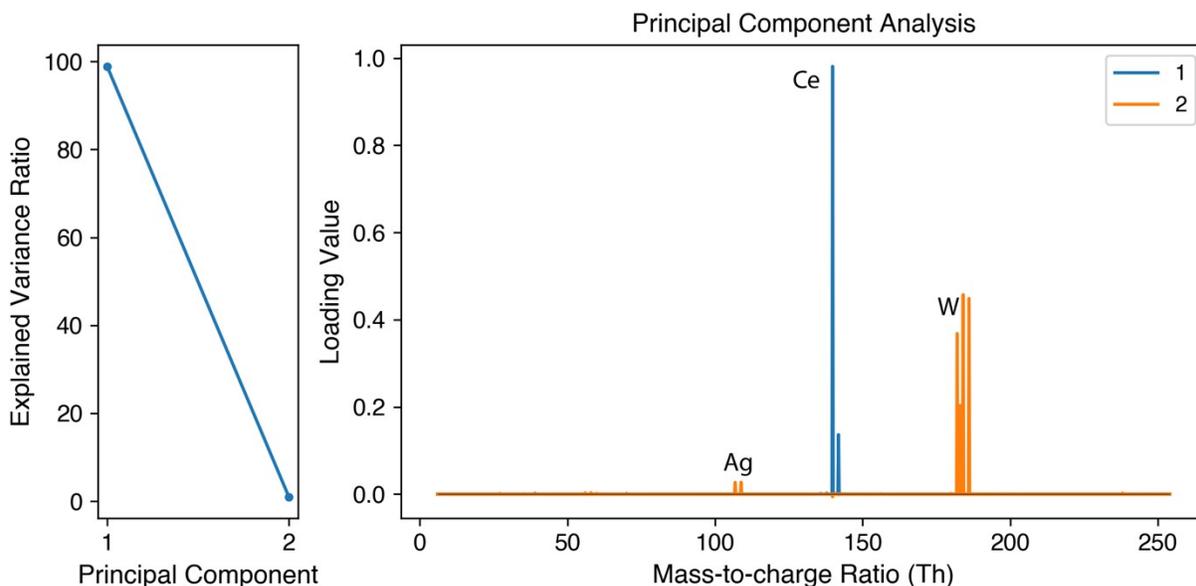


Figure S4. TOFHunter principal component analysis (PCA) results showing Ce, W, and Ag as the major variance sources within the salt dataset.

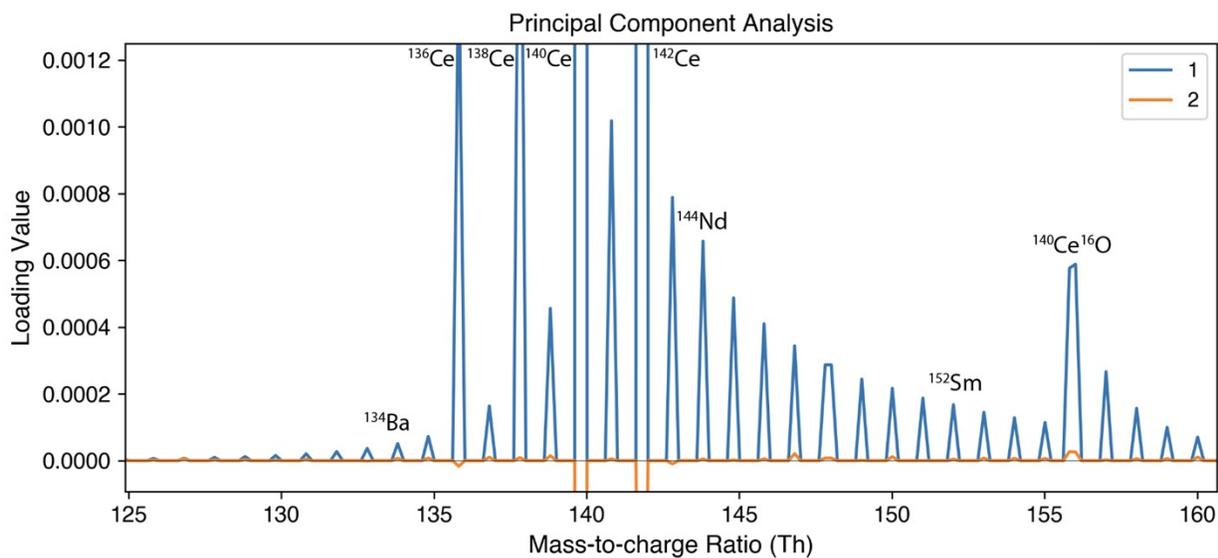


Figure S5. Expanded view of TOFHunter PCA loadings showing other impurities that overlap with Ce isotopes.

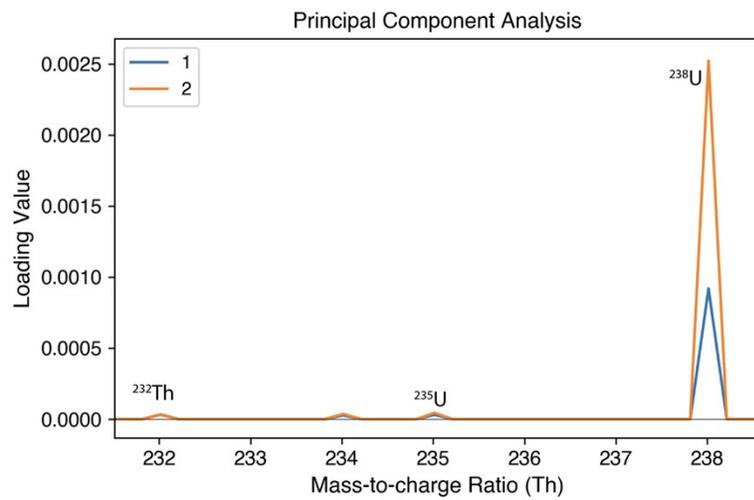


Figure S6. Expanded view of TOFHunter PCA loadings showing U impurities.