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## Measurement of Curium Fluoride Anions by Accelerator Mass Spectrometry

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Radiotoxic actinides including  $^{236}\text{U}$ ,  $^{239/240}\text{Pu}$ ,  $^{241}\text{Am}$ , and  $^{244}\text{Cm}$  are found in spent nuclear fuels and high-level radioactive waste. In particular  $^{244}\text{Cm}$  (half-life 18.1 y) is a useful tracer of exposure to radioactive materials, but dose assessments typically require measuring atto- to femtogram levels of curium in biological and environmental media. Accelerator mass spectrometry (AMS) is the only technique able to measure such ultra-low level abundances, but suffers from relatively poor ionization efficiencies for curium oxides made in sputter-ion sources used by AMS. In our work (i.e. Cornett et al [NIMB 2015]) we have experimented with a variety of sample chemistries and target matrices in an ongoing effort to boost anion currents for AMS actinide measurements of U, Am and Pu. To-date, the addition of  $\text{PbF}_2$  is shown to boost specific fluoride anions for actinides, and the addition of Si and Ta appears to form the most promising matrix for UO-current enhancement, resulting in a 3x increase of anion currents (Kazi et al [this meeting]). The situation for Cm remains unknown. Here we present the first AMS spectrum of curium fluoride anions generated during sputtering. We use samples spiked with  $^{244}\text{Cm}$ , and assess whether curium fluorides, with the assistance of  $\text{PbF}_2$ , give an improvement in beam current compared to curium oxides, and whether Si/Ta matrices further boost curium oxide anion currents. The ability to increase curium currents may allow lower-level measurements of  $^{244}\text{Cm}$  in natural samples, and may be useful for studies of even rarer heavier elements including Bk, Cf and others by AMS.

**Primary author:** CHARLES, Christopher (University of Ottawa)

**Co-authors:** Prof. CORNETT, Jack (University of Ottawa); KIESER, William (University of Ottawa); ZHAO, Xiaolei (University of Ottawa); KAZI, Zakir (University of Ottawa)

**Presenter:** CHARLES, Christopher (University of Ottawa)

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