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【337】Increasing the ionization yield for the detection of 236U and 233U by AMS

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The detection efficiency of Accelerator Mass Spectrometry for long lived uranium isotopes (^{236}U or ^{233}U) is mainly limited by the rather low yield of the corresponding negative ions extracted from a caesium sputter ion source ($\approx 10^{-4}$). With our new sample preparation method environmental U is embedded in only 200 µg Fe_2O_3 matrix which is then mixed with PbF_2. Extracting U as UF_5^- instead of UO^- yields an improvement in detection efficiency by more than a factor 10. UF_5^- extraction seems advantageous for the suppression of molecular isobaric background ($^{232}ThH^{3+}$, $^{235}UH^{3+}$) and allows operation at lower He stripper gas pressure.

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