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Measurement techniques for ^{236}U with a compact AMS system

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^{236}U has an important role as an emerging tracer in geochemical and oceanographic studies. A new compact AMS device at the China Institute of Atomic Energy (CIAE) enables efficient transmission of actinides. In this study, we focus on its capabilities to analyze uranium isotopes, mainly for ^{236}U measurements. Compared to the air-insulated AMS system, which is the previous generation of the device at CIAE, we have reduced the footprint of the whole system by half. The compact AMS system (0.25 MV) maintains extremely high measurement sensitivity, which has been tested with ^{129}I and ^{239}Pu , by using a new simple Bragg detector and installing a second magnet on the HE-side. Besides, the compact accelerator implements gap acceleration and gas distribution control techniques that greatly suppress charge exchange processes.

In order to establish the measurement techniques for ^{236}U with the compact AMS system, the background and sensitivity for $^{236}\text{U}/^{238}\text{U}$ will be studied and analyzed in detail. Then, accurate measurements of ^{236}U and other rare uranium isotopes such as ^{233}U will be carried out.

Student Submission

Yes

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