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Development of ^{129}I measurement technology with the home-made compact AMS facility at CIAE

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^{129}I is a long-lived nuclide with very low nature level, but the presence of ^{129}I in the environment has changed significantly since the beginning of the nuclear era. Accelerator mass spectrometer (AMS) is the most sensitive method for ^{129}I measurement, which is widely used in environmental monitoring, geological evolution dating, nuclear activities tracking and other fields. For further expanding the applications of ^{129}I , a home-made compact AMS facility has been developed by China Institute of Atomic Energy (CIAE), recently. In this paper, the measurement technology of ^{129}I has been established with this facility. Charge state $2+$ is selected at high-energy side and transmission efficiency of 55% for $^{127}\text{I}^{2+}$ is obtained. The measurement sensitivity of $^{129}\text{I}/^{127}\text{I} \approx 1.5 \times 10^{-14}$ has been achieved. At present, this facility can be used for routine measurement of ^{129}I .

Keywords: ^{129}I , compact AMS, home-made, measurement technology

Student Submission

No

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