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Preliminary tests of the new 6MV-AMS in IGGCAS, Beijing

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A new 6 MV tandem accelerator entered the Institute of Geology and Geophysics, Chinese Academy of Sciences (IGGCAS), Beijing in 2023. Similar model accelerators (18SDH-2, National Electrostatics Corp., USA) were previously installed in Tsukuba, Japan and Ansto, Australia in 2014. Drawing from these prior experiences, the IGG accelerator was specifically designed for multi-nuclide AMS measurements, focus on high-sensitivity detection of 10Be, 14C, 26Al, 36Cl, 41Ca, and 129I.

Following one year of construction and conditioning efforts, the IGG-AMS is now capable of conducting accurate carbon-14 measurements (~0.3% for IAEA series standards) with background levels below 0.2 pMC. Sample preparation involves the use of an auto-graphitization device called CEGS from AEON Crop., USA – marking its first introduction into China.

For beryllium-10 analysis, the high terminal voltage allows direct separation of both beryllium-10 and boron-10 in the gas detector without relying on degrader foil technique assistance. Initial tests using beryllium-10 standards indicate that we are approaching parameters to achieving high overall efficiency and counts per second (CPS). However, further improvements are necessary to enhance the performance across all isotopes.

Student Submission

No

Primary author: 陈, 实 (中国科学院地质与地球物理研究所)

Co-authors: 许, 冰; 徐, 子琪

Presenter: 陈, 实 (中国科学院地质与地球物理研究所)

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