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# Development of an Automatic Sequential Extraction Device for Pu and Am Isotopes in Radioactive Waste Samples

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**Abstract :** This study presents an automatic sequential extraction device for Pu and Am isotopes in radioactive waste samples from the nuclear power plant with anion exchange resin and TRU resin. After radionuclides were leached from the radioactive waste samples with concentrated HCl and $HNO_3$, the sample was allowed to evaporate to dryness after filtering the leaching solution with 0.45 micron filter. The Pu isotopes were separated in $HNO_3$ medium with anion exchange resin. For leaching solution passed through the anion exchange column, the Am isotopes were sequentially separated with TRU resin. Automatic sequential extraction device built-in software information of separation for Pu and Am isotopes was developed. The purified Pu and Am isotopes were measured by alpha spectrometer, respectively, after the micro-precipitation of neodymium. The data of Pu and Am isotopes in radioactive waste with an automatic sequential extraction device developed in this study were validated with the ICP-MS system.

**Keywords :** automatic sequential extraction device, Pu isotopes, Am isotopes, alpha spectrometer, radioactive waste samples, ICP-MS system
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