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Doubly magic nucleus 270Hs

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Investigating short-lived nuclei using rapid chemical separation and subsequent on-line detection methods provides an independent and alternative means to electromagnetic on-line separators. The predicted enhanced stability around 270Hs has major importance for the experimental investigation of superheavy elements by chemical means. Chemical separation of Hs in the form of HsO₄ provides an excellent tool to study the formation reactions and nuclear structure of nuclei close to the deformed nuclear shells at Z=108 and N=162. Here we report on results of a recent Hs chemistry experiments performed at GSI Darmstadt. Element 108, hassium, was produced in the reaction $^{248}\text{Cm}(^{26}\text{Mg},\text{xn})^{274}\text{xHs}$ and chemically isolated. Observed decay chains were attributed to the decays of three different Hs isotopes - 269-271Hs. The observed decay properties provide strong indications for enhanced stability in this area of the heaviest known elements. New decay properties for these Hs isotopes and their daughters are discussed.

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