

Start of commissioning of UniCell - A new fast and highly efficient buffer-gas stopping cell for superheavy element chemistry

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Investigations of the chemical behavior of superheavy elements have recently reached element 115, moscovium. While 195-ms ²⁸⁸Mc is just barely sufficiently long-lived for studies with established methods at TASCA, no isotopes of the subsequent element, livermorium, with half-lives exceeding about 60 ms are currently known. Since the existing setup requires extraction times of several hundred milliseconds, faster extraction techniques are required to enable future studies of this heavier element. For this purpose, a buffer-gas stopping cell designed to provide fast and efficient extraction of superheavy element ions, UniCell, has been proposed. In contrast to many other stopping cells, UniCell stops ions in atmospheric pressure helium and extracts them through a funnel using strong DC gradients, supported by an RF field to suppress wall interactions and maximize efficiency. Simulations yielded extraction times as short as 2 ms and efficiencies approaching 100 %. A prototype has been constructed, which is currently being commissioned offline. The current status of UniCell will be presented.