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Advancements in the fabrication and characterization of actinide targets for superheavy element production

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All isotopes of the elements with atomic numbers 114 and above as well as many of the longer-lived isotopes of lighter superheavy elements are only accessible in fusion reactions with actinide targets. Accordingly, the production of actinide targets is an important topic in the field of SHE research, especially with new accelerator facilities coming online that deliver ever more intense heavy-ion beams. After a brief review the current status of actinide target production with a focus on the activities at Johannes Gutenberg University Mainz, new developments towards the production of thicker and more beam-tolerant targets will be presented. Main current activities focus on improved analytics of irradiated targets to better understand beam-induced modifications and the effects that ultimately lead to target failure, and on the development of novel electrochemical methods that promise to allow overcoming some of the limitations of the current standard technique of molecular plating.

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