

Production of ^{99}Mo Using High-Current Alpha Beams

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ABSTRACT

It has been shown that alpha particle accelerators can be used to produce high specific activity ^{99}Mo effectively by bombarding a ^{96}Zr target using the reaction $^{96}\text{Zr}(\alpha, n)^{99}\text{Mo}$. This process generates minimal waste and does not involve use of uranium. Further, ^{99}Mo produced by this process can be used in existing generator production. In order for this process to be practical and cost effective, it is necessary to use high-current alpha particle beams. Alpha Source has developed, demonstrated and patented the source technology, and is working on development of target, and accelerator technology necessary to provide 100 mA_e alpha particle beam currents. A 100 mA_e system could produce up to 271 6-day Ci/week at a specific activity of 100 kCi/mg, based on ^{99}Mo production yields and specific activity of previous experiments using a low beam current.