

A Novel Micro-porous Sorbent for $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ Generator Using (n,γ) ^{99}Mo

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ABSTRACT

A $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ generator based on molybdenum (n,γ) has been prepared using a novel microporous composite (MPCM) resin as an adsorbent. The MPCM resin is found to be capable of adsorbing >60 wt% molybdenum of its body weight at solution pH 3.0. A generator consisting of MPCM resin loaded with ^{99}Mo (1Ci/gram of resin) was prepared. $^{99\text{m}}\text{Tc}$, the decay product of ^{99}Mo , was eluted mainly with saline solution (0.9% NaCl). A guard column with alumina as an adsorbent was used to keep ^{99}Mo in the eluent less than 0.15 μCi of ^{99}Mo per mCi of $^{99\text{m}}\text{Tc}$. The elution contains a yield of > 80% of the theoretical amount of $^{99\text{m}}\text{Tc}$ available from the ^{99}Mo over the life of the generator.