

**Mo-99 2015 TOPICAL MEETING ON
MOLYBDENUM-99 TECHNOLOGICAL DEVELOPMENT**

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Recent Developments in Perma-Fix Medical's Tc-99 Production

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ABSTRACT

Penna-Fix Medical SA has developed a $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ generator based on molybdenum (n,y) using a novel micro-porous 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. Recent test confirms that the company's proprietary resins could withstand higher levels of radiation, up to 6 Curies (1.5 Ci/gram of resin), while producing clinically useful doses of $^{99\text{m}}\text{Tc}$. The effect of different operating parameters to demonstrate a prototype $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ generator was also investigated. $^{99\text{m}}\text{Tc}$, the decay product of ^{99}Mo , was eluted mainly with saline solution (0.9% NaCl). 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. The breakthrough of ^{99}Mo and the pH of the eluent that pass through an alumina guard column are within the USP and EUP limits.