

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

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**Feasibility of Transmutational Production and Magnetic Extraction of
Moly-99 via 1-neutron Knockout and Exchange Reactions in
Auto-colliding Beam of Natural Mo Ions in Strong-focusing Precetron
("EXYDER") and Electric Energy Recuperation by Ion Decelerator**

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ABSTRACT

Copious T and ^3He production in auto-colliding 0.725 MeV D⁺ beam of Precetron (MIGMA IV), has opened novel transmutational isotope manufacture. We propose a feasibility study for an upgraded precetron ("EXYDER") by replacing weak with strong focusing to manufacture ^{99}Mo via n- exchange $^{100}\text{Mo} + ^{98}\text{Mo} \rightarrow 2\ ^{99}\text{Mo}$ and n- knockout reaction $^{100}\text{Mo} + ^x\text{Mo} \rightarrow ^{99}\text{Mo} + ^x\text{Mo} + \text{n}$, x = 94-98 (natural isotopes). From EBIS Preinjector 17 times ionized beam of $^x\text{Mo}^{17+}$ will be accelerated by 3 MeV injector to 50 MeV thus resulting in 50 MeV \rightarrow \leftarrow 50 MeV collisions. Beam of so produced $^{99}\text{Mo}^+$ is magnetically channeled into mass spectrometer and collected at one loci, all other masses/radii rejected. Parameters required to produce at 8 to 80 mg of ^{99}Mo per day will be presented.