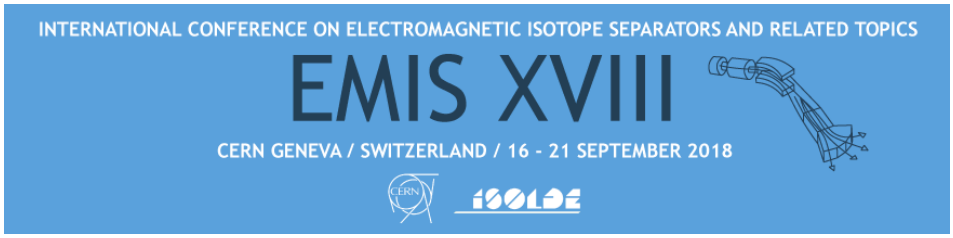

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Molybdenum production with Laser technique at SPES: MOLAS Project

Tuesday 18 September 2018 17:08 (1 minute)

The MOLAS project (Molybdenum production with Laser technique at SPES) calls for the production of 99Mo radioactive ions by means of the method that has being employed for the generation of ion beams studied in nuclear physics experiments.
The hypothetical system includes a commercial cyclotron with energy in the range 10 MeV to 20 MeV and a production target.
The target is a Molybdenum disk or a multi-foil structure, like the UCx SPES target, activated by the highly energetic protons coming from the cyclotron.
Once activated, the target undergoes a laser ablation process and the evaporated atoms are then available for subsequent ionization, which is necessary to select 99Mo through a mass spectrometer and collect the selected atoms.
The laser ablation, laser photoionization and mass separation process chain is the paramount aspect of the MOLAS idea that allows to avoid several problems:
Laser ablation solves the refractory element high evaporation temperature problem; Laser photoionization is the perfect technique to couple with Time of Flight mass separation system, together they solve the delivery of an isotopic pure beam of element of interest possibly without any request of an isotopic pure Mo target at the beginning.
Furthermore, laser resonant photoionization could be itself the starting point for isotope separation using different excitation and ionization levels for different isotopes.
The MOLAS project could be thus a cost-convenient method to produce high pure 99Mo to be used in the actual 99Tc chain of production.

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