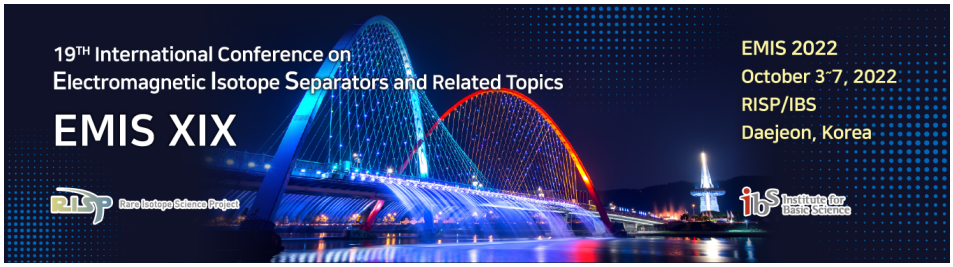

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The CERN-Nano Laboratory –A research and development facility dedicated to the production of nano materials

Tuesday, 4 October 2022 23:28 (8 minutes)

The CERN-Nano Laboratory is a recent extension to the Class A Laboratories, CERN's only laboratory with the capabilities to manipulate and change the chemistry of highly radioactive open-sourced materials.
Both the CERN-ISOLDE (Isotope Separator On Line DEvice at CERN) and CERN-MEDICIS facilities (MEDical Isotopes Collected from ISolde) have the resources to create radioactive ion beams using irradiated targets from the proton beam of the Synchro Cyclotron facility at CERN. These targets are operated at very high temperatures of 2000◦C and above, to accelerate diffusion through the grains of the target material. The elevated temperature leads to sintering of the material over time, resulting in larger grains and increased diffusion times. A lever to shorten the diffusion time is the decrease of the particle size. Nano-structured materials have shown to exhibit unmatched release properties, promising higher overall yields of short-lived isotopes despite their lower density and associated production rate. The new CERN-Nano Laboratory has the abilities to reduce the grain size of these target materials resulting in highly porous nano structure which encourages a higher release rate for short lived isotopes and generally higher isotopic yields.
With the project in full swing, the aim is to start producing nano materials by the end of 2022.

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