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# TATTOOS - Plans for The New Swiss Isotope Production Facility @ PSI

*Monday, 16 May 2022 09:00 (30 minutes)*

With its continuous proton beam of world-leading power (1.4 MW), the HIPA facility at the Paul Scherrer Institute (PSI) represents one major asset in the line-up of Swiss large-scale research infrastructures. A recent Swiss Research Infrastructures Roadmap Application from PSI and the University of Zurich (UZ) for 2025-28 named Isotope and Muon Production with Advanced Cyclotron and Target Technology (IMPACT, https://www.psi.ch/en/impact) suggests the high-energy 590-MeV protons to be put towards use for intensified muon production (HIMB - High-Intensity Muon Beams) on one side and isotope production (TATTOOS - Targeted Alpha Tumor Therapy and Other Oncological Solutions) on the other side at unprecedented intensities and amounts. The aim of this presentation is to highlight the scope of the TATTOOS proposal, since it offers unique opportunities for isotope production for fundamental and applied radiochemistry as well as nuclear chemistry. The main goal of TATTOOS is the production of isotopically and radiochemically pure radionuclides for radiopharmaceutical use. However, the production route over high-energy nuclear spallation using 100 uA of the proton beam allows for assessing unprecedented activities of a plethora of common as well as exotic radionuclides. Their mass separation, applying the ISOL technology - pioneered at CERN (ISOLDE, https://isolde.cern) –in conjunction with fast and efficient radiochemical separation - a specialization of the Laboratory of Radiochemistry (LRC, https://www.psi.ch/en/lrc) at PSI - will determine the high isotopical and chemical purity of the products applicable for radiopharmaceutical use as well as fundamental research. Here, we present design challenges of the high power production facility and highlight selected scientific cases specifically of interest to the LRC and the closely collaborating Center of Radiopharmaceutical Sciences (CRS, https://www.psi.ch/de/zrw) at PSI.

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