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Target- and ion source development at CERN-ISOLDE

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At the CERN-ISOLDE radioactive ion beam facility, the thick targets are irradiated using a beam of 1.4 GeV-protons. One of ISOLDE's features is the large choice of ion source types and targets materials available on the menu, enabling us to select the optimal combination for optimal intensity and purity of the isotopes requested by the ISOLDE Users. Ever increasing demands in terms of isotope production yield, beam purity, and overall reliability of the employed systems are drivers of the continuous development efforts.

Over the last years, CERN has invested especially in facilities and infrastructure that facilitate ongoing developments required for CERN-ISOLDE. A dedicated off-line laboratory (Offline 2) has been recently equipped with a laser setup required for developments of specialized laser ion source types such as VADLIS and LIST. Moreover, it hosts a twin setup of the ISOLDE RFQ cooler and buncher (ISCOOL), which is envisaged to be used for studies of molecular beam creation and breakup as well as the development of the RFQ itself. For material development, especially for nano-structured materials, the new nano laboratory has just been commissioned and will enable to produce and develop nano actinide targets for ISOLDE.

In this contribution we shall describe the infrastructure required for target and ion source developments, highlight recent efforts and experimental results on both target material development and ion source development and we will give an outlook what to expect in the near future.

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