

The preparation of radioactive ion beams in ISOL-type facilities

P. Delahaye¹, T. Giles¹, A. Jokinen², O. Kester³, F. Wenander¹

¹ *ISOLDE, CERN, 1211 Geneva 23, Switzerland*

² *Department of Physics, University of Jyväskylä, 40014 Jyväskylä, Finland*

² *Gesellschaft für Schwerionenforschung mbH, 64291 Darmstadt, Germany*

The study and elaboration of an advanced radioactive-ion-beam (RIB) preparation is a key-point for the development of next generation ISOL-type facilities. Rapid and efficient charge breeding techniques are required for the post-acceleration of a wide variety of exotic beam, in intensity, half-life and mass range. Fast ion cooling and beam bunching techniques are essential for the radioactive-beam manipulation. They permit a better transport through the beam lines and a better transmission through the spectrometers by the reduction of the beam emittance. The time structure such bunching provides is of interest for many physics experiments, which require a pulsed beam and/or a time reference. Combined with a high resolution separator they should permit an enhancement of the achievable beam purity.

In the frame of EURISOL, different beam preparation techniques are developed and compared. Mainly based on studies undertaken at ISOLDE, CERN, with the REXEBIS and Phoenix ECR charge breeders, and with the REXTRAP and ISCOOL ion coolers, this contribution will review the beam preparation objectives and the latest results obtained with related state-of-the-art techniques.