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Development of Radioactive Boron Beams for ISOLDE

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Even though ISOLDE can provide a wide range of isotopes from many different elements, extraction of some elements still proves to be difficult. This is especially true for refractory and chemically reactive elements like carbon, boron and refractory metals. Although extraction of these elements as more volatile molecules was suggested many decades ago, extraction has only been successful for some of these elements up to now. In particular beams of 8B are requested for a long time by a variety of experiments. However, until recently extraction of sufficient yields was not achieved at any ISOL facility.
This talk will present important considerations for the development of new ISOL beams and will give detailed information on investigations performed for the development of boron beams.
These considerations include calculations of production cross sections, the chemical equilibrium between boron and materials present in the target container as well as diffusion and ionization characteristics.
The results obtained from these studies were exploited in two prototype targets and tested at ISOLDE during the online period 2015, leading to the first ever ISOL beam extraction of 8B as 8BF_2ˆ+.

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