

## **Title:** Infrastructure for radioactive molecule production at CERN-ISOLDE

**Abstract:** ISOLDE is CERN's radioactive ion beam factory, where rare isotopes are created through bombarding a thick target with protons at an energy of 1.4 GeV.

The radioisotopes diffuse out of the target matrix and are ionized, accelerated to 60keV, thus forming an ion beam of typically singly charged ions, which are mass-separated using dipole mass separators.

The creation of radioactive molecules has typically been rather a necessity where, especially for refractory elements, the formation of a volatile molecule is required to release the short lived isotopes from the target. In many cases, the user is unaffected from the form in which the radioisotope is delivered.

In the 2018 RaF CRIS experiment performed at ISOLDE, the users actually wanted to study the molecule. This experiment has added another good reason to produce molecular beams at rare isotope facilities.

We will present how isotopes are produced at ISOLDE and motivate molecular ion beams. We will show existing and planned infrastructure to create and study molecules in the off-line and on-line laboratories. And we will close with highlights of the most recent results and ongoing studies.

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