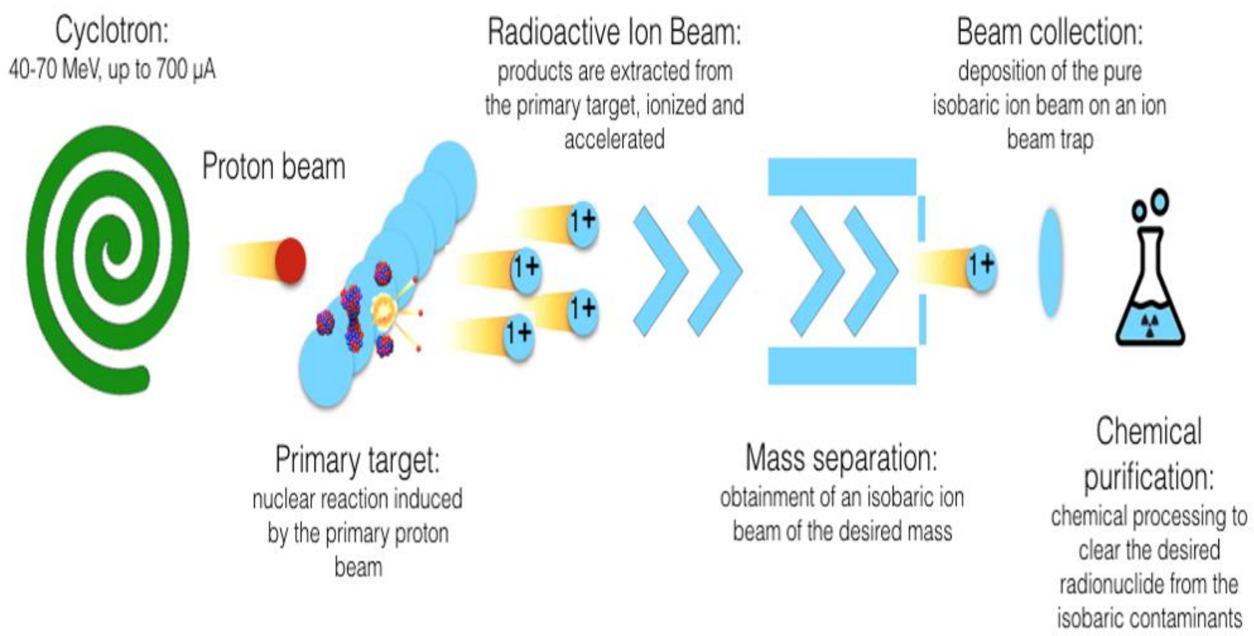
VERY PURE RADIONUCLIDES FOR NUCLEAR MEDICINE



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An Italian research group developed a new method for the production of high quality radionuclides as radiopharmaceuticals precursors. The isobaric beams generated by a low-energy cyclotron are used for the production of carrier-free radionuclides, with potential uses in nuclear medical research.

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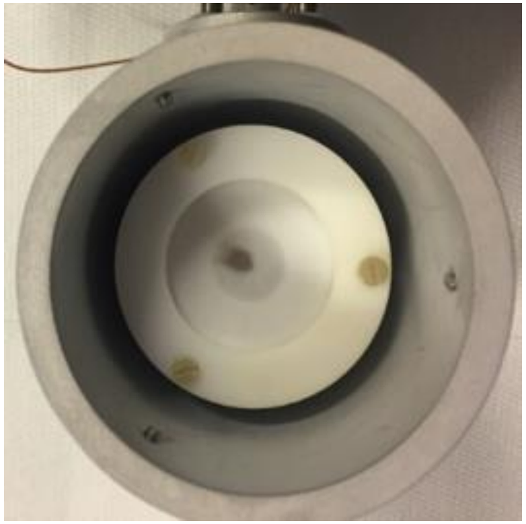
DESCRIPTION :

Current methods of producing radiopharmaceutical precursors have issues such as high costs, production of contaminants, laborious separation methods and formation of big quantities of radioactive wastes. ISOL (Isotope Separation On-Line) is recognized as a major method for the production of high intensity and quality radioactive ion beams for nuclear physics studies. It allows to produce exotic nuclei with high efficiency, rate and selectivity, so it is suitable for producing high-specific activity radionuclides to be used as radiopharmaceutical precursors. Through a primary accelerator, a low energy proton beam irradiates a target to form radioactive atoms which are ionized and extracted by acceleration as a beam. Mass separation of the beam generates an isobaric beam, which is deposited in an ion collector, subsequently chemically treated to yield “carrier-free” radionuclides.



ADVANTAGES:

- Mass separation allows the elimination of all possible nuclide impurities
- Very high specific activity of radionuclides
- Low energy, commercially available accelerators can be used, lower costs of production and maintenance with respect to reactors
- Limited amount of radioactive waste

APPLICATIONS:

- High quality radionuclides as radiopharmaceutical precursors available to biomedical research
- Production of highly innovative carrier-free radionuclides which can not be produced with the traditional methods
- Supply of radionuclides to the hospitals in the region