SIMULTANEOUS 225AC & 18F PRODUCTION WITH STANDARD MEDICAL CYCLOTRONS

Tech ID: 33630 / UC Case 2024-161-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

High flux (e.g., greater than 1012 n/s/cm2) neutrons with energies between 8 and 30 MeV are needed for a number of applications including radioisotope production. However, none of the existing neutron sources available can fulfill these requirements. Neutron flux intensities from typical neutron sources using Deuterium-Tritium (DT) fusion are typically more than 2 orders of magnitude lower in intensity than what is needed for making production practical. Deuterium-Deuterium (DD) fusion sources provide a spectrum which is too low in energy to perform the nuclear reactions needed for isotope production. High-energy proton accelerator-driven spallation sources produce isotopes with significant co-production of unwanted radioisotopes, due to a neutron spectrum which is far higher in energy than required. While accelerator-driven neutron sources using deuteron breakup have been shown to be a viable pathway for producing a range of isotopes including actinium-225 1, a limited number of machines capable of producing ~30 MeV deuteron beams exist commercially.

To address this problem, researchers at UC Berkeley have developed systems and methods for producing radionuclides using accelerator-driven fast neutron sources, and more specifically for producing actinium-225, an inherently-safe, fast neutron source based on low energy proton accelerators used throughout the world to support positron emission tomography.

SUGGESTED USES

Cancer therapeutics

ADVANTAGES

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

radiopharmaceuticals, targeted alpha therapy

CATEGORIZED AS

- **Engineering**
  - Engineering
- **Medical**
  - Disease: Cancer
  - Therapeutics

RELATED CASES

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