Systems and Methods for the Cyclotron Production of Iodine-124

View U.S. Patent No. 8,098,789 in PDF format.

WARF: P04326US

Inventors: Jonathon Nye, Robert Nickles

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an improved method for the cyclotron production of I-124.

Overview

Position emission tomography (PET) plays a vital role in the diagnosis of health and disease. The long-lived isotope iodine-124 (I-124; half-life 4.2 days) has many features that make it an attractive imaging agent for PET; however, commercial biomedical cyclotrons have not been able to produce large quantities of I-124.

The Invention

UW-Madison researchers have developed an improved method for the cyclotron production of I-124 using an aluminum telluride (Al_2Te_3) target. The method involves producing I-124 from an isotopically enriched aluminum telluride target via the $^{124}Te(p,n)$ or $^{124}Te(d,2n)$ reaction. The I-124 formed during irradiation is sublimated from the target stock by dry distillation in a resistive furnace and then swept in a gas stream to a chilled quartz trap downstream. It may be delivered as a solid film on a quartz tube or extracted by scrubbing with a mild base for radio labeling.

Applications

- Production of I-124 for PET

Key Benefits

- Enables the production of I-124 in commercially useful quantities
- Improves trapping of I-124
- Allows I-124 to be used in PET scans of molecular compounds that accumulate slowly in target cells in the human body

Additional Information

Related Intellectual Property

- View Divisional Patent in PDF format.

Tech Fields

- Materials & Chemicals : Synthesis
- Medical Imaging : Other diagnostic imaging