

PLPAC meeting 2024-1

Contribution ID : 6

Production of ^{52}Mn via natCr (p, n) ^{52}Mn reaction and its radiochemical separation for preparation of radiopharmaceuticals

Tuesday 23 Apr 2024 at 10:45 (00h15')

PI info :

Dr. Rubel Chakravarty

local collaborator info :

Shri S.C. Sharma, NPD, BARC

Collaborators Name :

Shri S.C. Sharma, NPD, BARC

Motivation :

Manganese-52 ($T_{1/2} = 5.6$ d, $E_{\beta^+ \text{max}} = 575$ keV; average $E_{\beta^+} = 242$ keV, branching ratio $\beta^+ = 29.4$ %) is an emerging radiometal that holds tremendous potential in nuclear medicine. The radioisotope can be produced in a low-energy particle accelerator using natural Cr-metal target via ^{52}Cr (p, n) ^{52}Mn reaction. Production, radiochemical separation and purification are the vital steps towards obtaining no-carrier-added (NCA) grade ^{52}Mn in a form suitable for formulation of radiopharmaceuticals for cancer imaging.

Beam time requirement in shifts :

12

Beam :

Proton

Beam Energy :

16 MeV

Beam Current :

100-200

Beam Port :

6M

Buncher Required :

No

Target / Sample Details :

Chromium metal powder

Whether the experiment is part of PhD work ? :

No

Whether the experiment is part of Post-Doc work ? :

No

information on the past beamtime at PLF :

In the recent past, proton beam time was availed for production of ^{69}Ge and ^{44}Sc for formulation of PET radiopharmaceuticals.

Publication information related to prior work at the PLF :

[1] Intrinsically ^{69}Ge -Labeled Gum Arabic Glycoprotein Coated Gallium Oxide Nanoparticles: A New Nanoprobe for PET Imaging

Sanchita Ghosh, Sourav Patra, Apurav Guleria, Annu Balhara, Santosh Kumar Gupta, Avik Chakraborty, Sutapa Rakshit, Sanjay Vishwanath Thakare, Anil Krishna Debnath, Sudipta Chakraborty, Rubel Chakravarty*, Ind. Eng. Chem. Res. 2023, 62, 47, 20269–20279.

[2] Accelerator Production, Radiochemical Separation and Nanoradiopharmaceutical Formulation using ^{69}Ge : A Next Generation PET Probe

Sourav Patra, Sanchita Ghosh, Khajan Singh, Bijaideep Dutta, Avik Chakraborty, Naresh Gamre, S. V. Thakare, K. C. Barick, Sutapa Rakshit, P. A. Hassan, Sudipta

Chakraborty, Rubel Chakravarty*

J Drug Del Sci Technol 2024; 91: 105204.

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Presenter : Dr. CHAKRAVARTY, Rubel (Bhabha Atomic Resaerch Centre)

Session classification : --not yet classified--

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