



SPECIFICATION SHEET NUARPERAB Versatile Platform for Processing of Cyclotron-Produced Radiometals



CRAB is an automated radiometal laboratory system designed for processing solid or liquid cyclotron targets, through a final separation step based on solid phase extraction or ion-exchange chromatography.

Benefits

- Operation completely remote controlled
- · Automated handling of a target coin
- · Designed to minimise personnel doses
- Easy control of final activity concentration
- Designed for various target coin diameters
- Adjustable for different types of radiochemical syntheses

Key features



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Product description

This automated target processing unit is capable of separating radionuclides from:

liquid, e.g. solution-based targets (⁶⁸Ga, ⁸⁶Y, etc.),
or solid targets (⁶¹Cu, ⁶⁴Cu, ⁶⁸Ga, etc.).

In the latter case, the target is formed by a 1 - 2 mm thick metal disc of suitable diameter, usually 22 - 24 mm. The disc is either made of the target material itself (e.g. Ni for production of 61 Cu), or an inert metal (Au, Pt-Ir) covered with a thin layer of the enriched target material (64 Ni, 68 Zn, etc.).

The system allows for automated chemical processing of the irradiated target layer (dissolution, radionuclide separation, formulation, simple labelling).



Product applications

- Fully automated system to increase reproducibility and to minimise personnel doses
- Separation process based on solid phase extraction (SPE), finished by formulation of the separated radionuclide into a desired solvent
- \cdot System driven by PLC and I/O cards, communication with PC via Ethernet cable

Product specifications

- \cdot Two reactors, two selectors, a peristaltic pump, 3 and 2 way valves, and a separation column
- \cdot Up to four positions for the uploading of solvents into the first reactor or the SPE column for the separation steps
- Three positions for the uploading of solvents to the reactor R2 that may be used for formulation or for simple labelling steps
- In-built solid phase extraction column for the separation driven by peristaltic pump and solvents
- · 3 GM tubes for high activity measurement
- Shielded container and target holder enabling automatic unloading of the target coin of the cyclotron target and automatic loading to the CRAB unit



Specifications

Module dimensions	50 × 50 × 50 cm
Power supply	230 VAC / 24 VDC
Max. inlet pressure	7 bar (air / noble gas)
Max. processable activities	Hundreds of GBq

Practical experience

Number of processed targets	30
Target type	⁶⁴ Ni electroplated on the 10 mm dia central part of the 24 mm dia Au disc
Solvent	20% nitric acid
Separation process	Complex ion-exchange chromatography
Product volume	Evaporated product is dissolved in the desired volume of 0.001 M HCl (minimum ca 300 μ l due to the transfer efficiency)
Total separation efficiency	80%
Total processing time	70 min (dissolution of the target, chemical separation, evaporation, dissolution of the residue)
Specific activity	> 3.7 GBa/microgram



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