



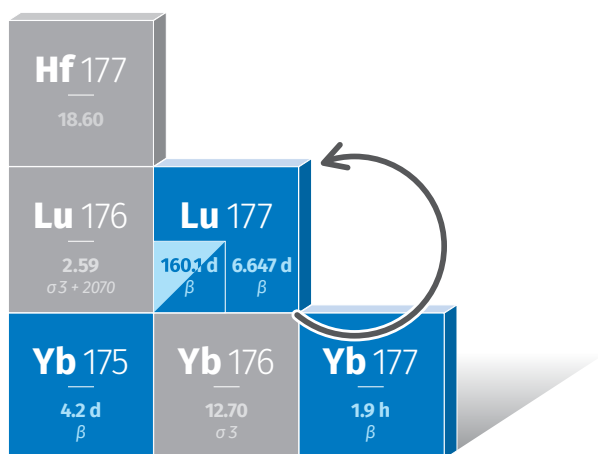
Non-carrier added **Lutetium Chloride** **(n.c.a. Lu-177)**



Science. Ingenuity. Sustainability.

GMP non-carrier added Lutetium-177

Non-carrier added (n.c.a.) Lu-177 is emerging as a radioisotope of choice for targeted radionuclide therapy due to its ideal parameters for therapy and minimal waste management requirements.



$^{176}\text{Yb}(n,\gamma)^{177}\text{Yb} \rightarrow ^{177}\text{Lu}$

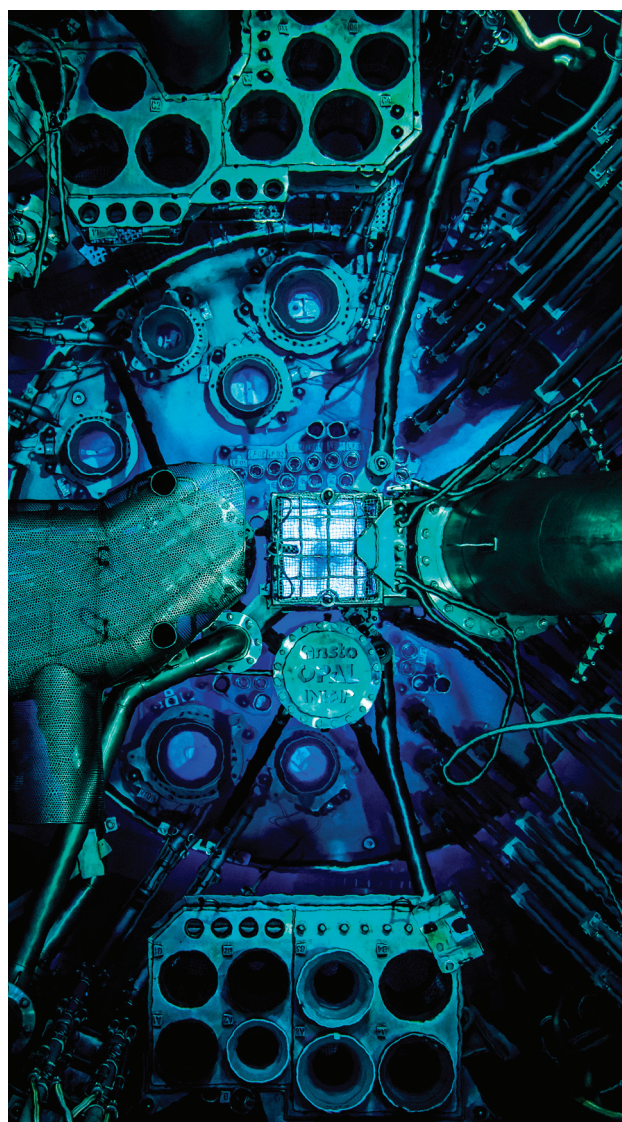
ANSTO's n.c.a. Lu-177 is manufactured to Good Manufacturing Practice (GMP) standards and utilises highly enriched ytterbium-176 as a starting material.

This provides the highest specific activity and radionuclidic purity and a non-carrier added product that is suitable for radiolabelling biomolecules, such as peptides and antibodies.

There is an additional benefit in that no long-lived metastable Lu-177m is co-produced during the manufacturing process, thereby reducing significant radioactive waste storage and disposal issues.

n.c.a. Lu-177 is a medium-energy β -emitter ($E_{\text{max}} = 0.498 \text{ MeV}$) with maximal tissue penetration of 2 mm, which results in the efficient deposition of the energy in tumour lesions and minimises damage to surrounding healthy tissue.

Additionally, it emits low-energy γ -rays which allow scintigraphy and subsequent dosimetry with the same therapeutic compound, making n.c.a. Lu-177 a theranostically-desirable radioisotope.



ANSTO's OPAL multi-purpose reactor.

Key advantages

- ✔ Specific activity of 4-5 times higher than carrier added Lu-177 which offers preconditions for an efficient radiolabelling reaction

- ✔ Significantly longer shelf-life

- ✔ No contamination with long-lived metastable Lu-177m (half-life 160.1 days) which requires management and storage of waste

- ✔ Sterile, endotoxin tested

- ✔ ANSTO has additional arrangements in place for security of supply



LUTETIUM CHLORIDE (Lu-177)

PRODUCT SPECIFICATIONS:

Element	Lutetium
Nuclide	Lu-177
Half-life	6.647 days
Main mode of decay	Beta
Decay energy	$E_{\text{max}} = 0.498 \text{ MeV}$
Chemical form	LuCl_3
Diluent	0.04M HCl solution
Activity concentration	20 - 200 GBq/mL at calibration
Activity	10 - 50 GBq per vial
Specific activity	> 3,000 GBq/mg
Packaging	2 mL V vial, closure with silicone stopper

Lutetium-177 is a radioisotope.

PURITY, RELEASE AND STORAGE:

PARAMETER	VALUE
Radionuclidic purity	$\geq 99.9\% \text{ } ^{177}\text{Lu}$
Radiochemical purity	$\geq 99\% \text{ } ^{177}\text{Lu}^{3+}$
Chemical purity	Radiolabelling yield (^{177}Lu Dotate) $\geq 99\%$
Sterility	Sterile (autoclaving)
Bacterial endotoxins (LAL)	< 175 EU/dose
Storage	Room temperature
Product expiry	14 days from production





Australian Government



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