

ANSTO Synroc[®]

A safe, secure and sustainable
radioactive waste solution

Shaun Jenkinson

Australian Nuclear Science and Technology Organisation (ANSTO)



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Our global problem

GLOBAL Legacy



Nuclear waste stockpiled pending a long-term solution

263,000 tonnes

Heavy Metal stored spent power plant nuclear fuel

4,130 tonnes

Heavy Metal Stored spent research and other nuclear fuel

29,000 m³

Stored high-level solid waste

6,670,000 m³

Stored high-level liquid waste

GLOBAL Future



Waste management solutions are increasingly required

- Approval of new technology conditional on a waste plan ✓
- Lifecycle waste planning delivers long term benefits ✓
- Social acceptance and trust ✓
- Synroc Solutions ✓

ANSTO Synroc[®] technology

Inspired by nature

- Based on naturally-occurring, highly-durable mineral phases
- Locked up U, Th over geological timeframes



Substantial benefits

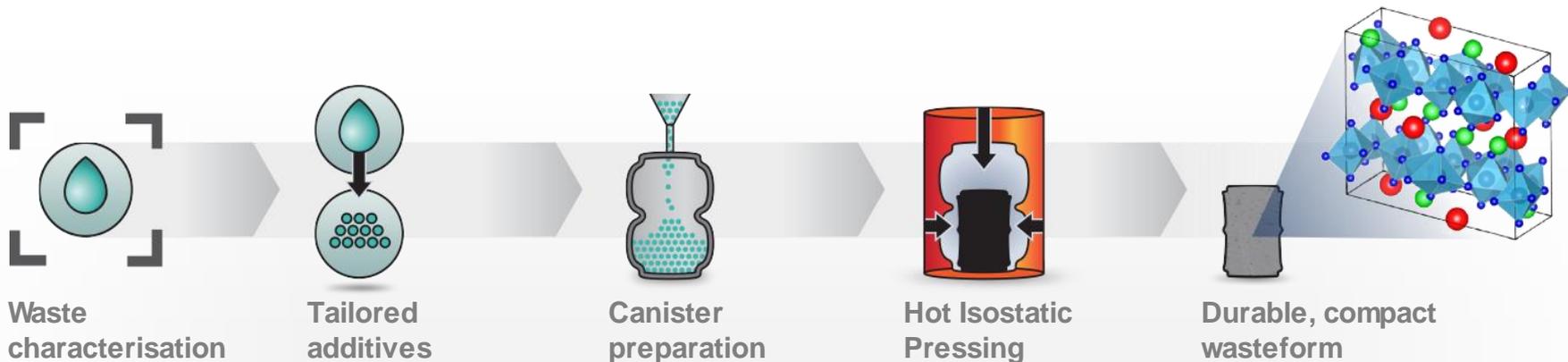
- High durability ✓
- Low disposal volumes ✓
- Suited for problematic wastes ✓
- Flexible modular technology ✓



ANSTO

- First of a kind Synroc Plant
- Mo-99 production waste

ANSTO Synroc[®] Technology

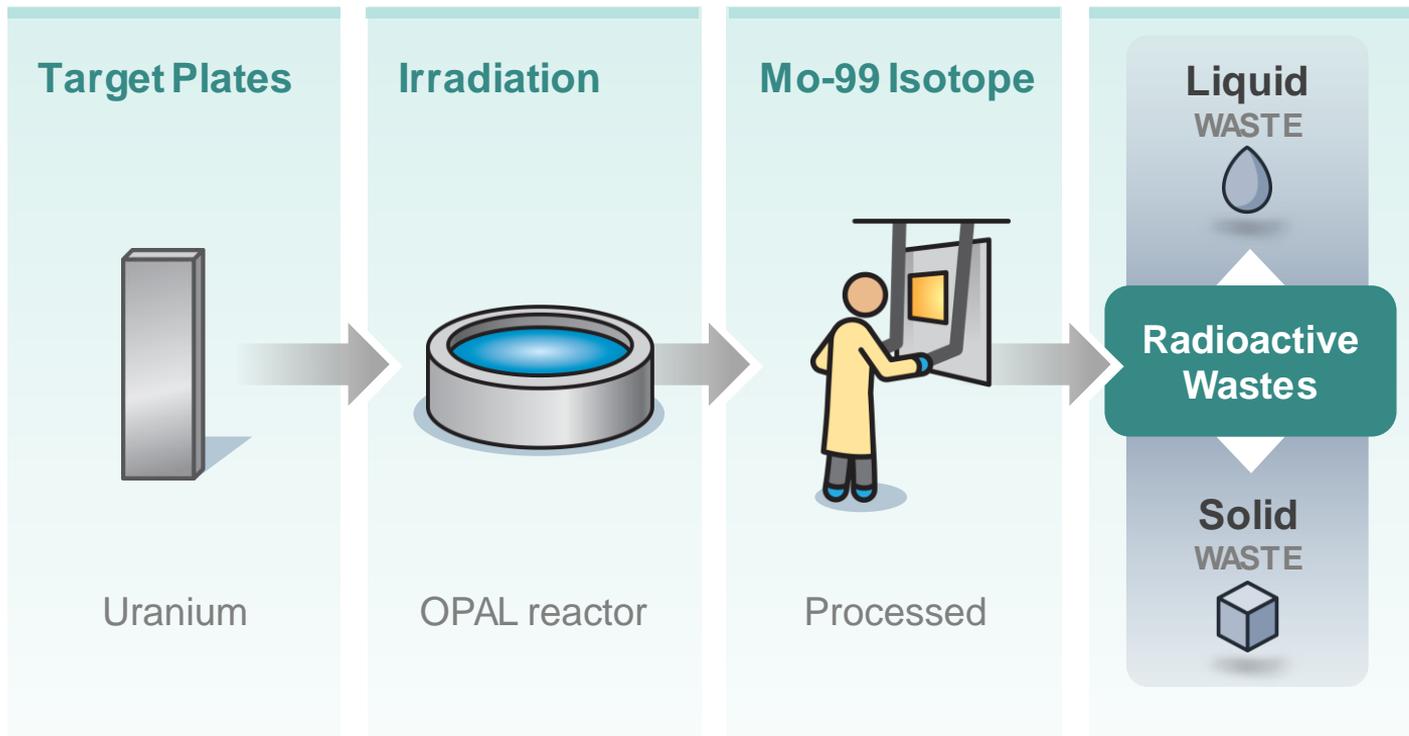


Decades of international study underpin Synroc wasteforms

Complementary to existing technologies such as vitrification

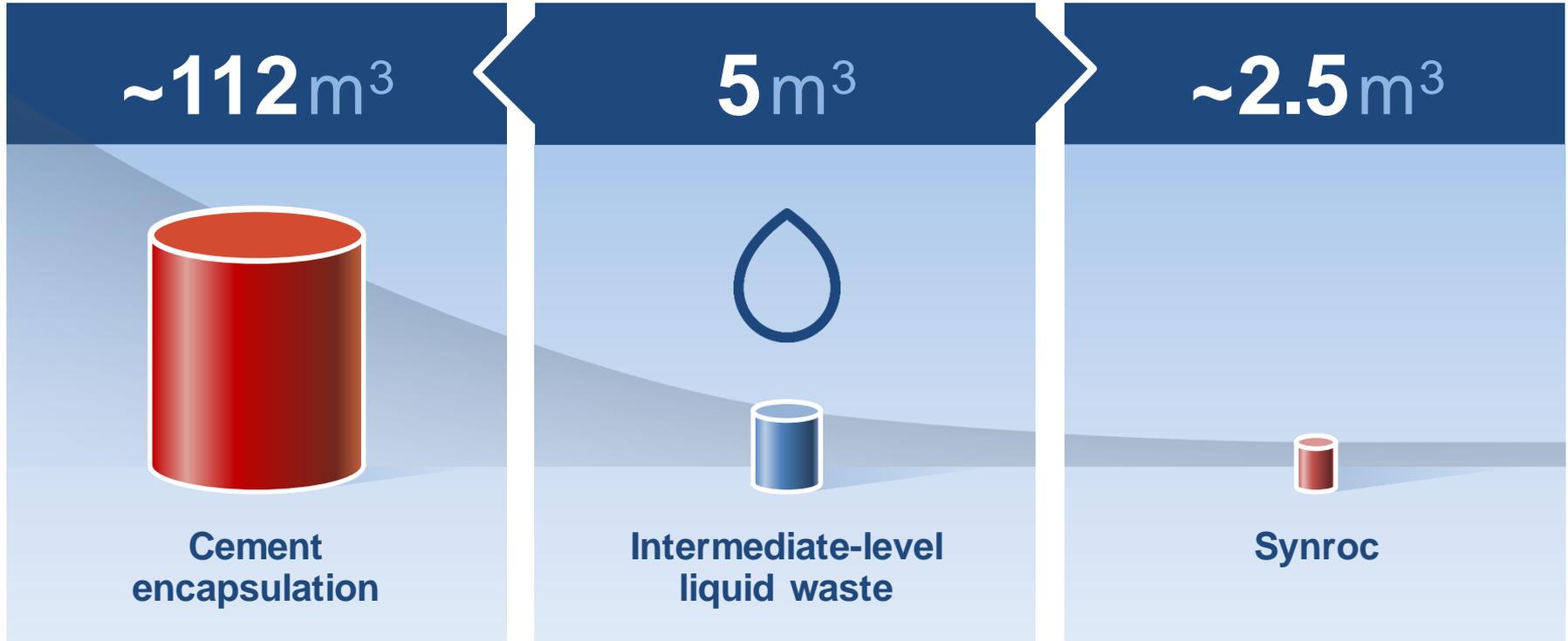
Ability to accommodate a broad range of challenging radioactive wastes

Mo-99 production at ANSTO



ANSTO's
Technetium-99m
Gentech® Generator

ANSTO Synroc[®] advantage for Mo-99



Facility construction



Innovative reactor & fuel cycle wastes

ANSTO Synroc® technology well positioned for:

Advanced Reactor WASTES



Chemically exotic fuels & coolants

EXAMPLES

Fluoride wastes | Chloride salt wastes

Fuel Reprocessing WASTES



Highly mobile, volatile & long $t_{1/2}$

EXAMPLES

Iodine-129 | Technetium-99

Actinide WASTES



Fissile, nuclear material

EXAMPLES

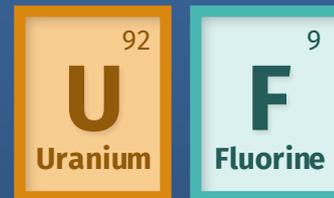
Uranium | Plutonium

SMR WASTES



- Molten salt wastes
- Actinide wastes
- Advanced fuel wastes

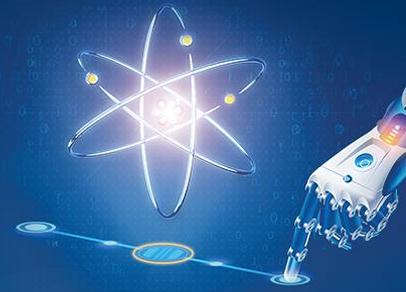
Advanced
wasteform design



Highly stable mineral phases containing Uranium, alkalis and Fluorine.

ANSTO Synroc[®] Waste Treatment Plant





Thank you

