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Australian Nuclear Science and Technology Organisation

**Media Release**

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## **Liquid Waste to Turn Rock-Solid in World-First**

In a world-first, construction of a plant to transform liquid radioactive waste into synthetic rock is now underway in Australia, reported *Velocity* today, ANSTO's free, on-line science magazine.

Synroc technology will be used to turn waste from ANSTO's medical radioisotope production into a structure that mimics rock in nature, forever trapping the radioactive products inside, explained Dr George Collins, ANSTO Chief of Research.

"Just like in nature, where some minerals trap radioactive materials in their crystal structure, such as uranium and thorium, synroc is designed to do the same with radioactive waste," said Dr Collins.

"The idea is that if nature's rocks can contain radioactive substances for millions of years then so can synroc," he said. "This will ensure radioactive waste stays safely locked away until radioactive levels have died away, a process that can take thousands of years.

"It also means that if water did come in contact with the rock the water would not become contaminated."

The technology to build the on-site plant was ten years in development and has become a reality thanks to the work of husband and wife scientist-engineers Dr Erden and Dr Devlet Sizgek and a team of ANSTO engineers.

The team has almost completed a full-scale mock-up immobilisation plant which is required to test custom-built equipment needed to process the radioactive material.

"The equipment must be tested and be in working order before it can be placed in a 'hot' cell which is specially shielded to handle radioactive material," said Dr Collins.

"Obviously to go in and out of a radioactive area frequently is not desirable, hence the machinery must be thoroughly tested before we actually start the process," said Dr Collins.

"Erden's work was focussed on developing the process by which the radioactive waste is combined with the other ingredients of synroc, while Devlet led the project during the technology development phase.

"ANSTO engineers have also played a key role in building the plant and making new equipment, it is a real team effort," concluded Dr Collins.

Once synroc is produced it is placed in cans and safely stored in a waste repository either above or below ground. Although the radioactive molecules are locked away in the synroc and cannot get out, the rock still emits radioactivity.

The full story on the work can be found at <http://velocity.ansto.gov.au>

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**For more information and to arrange an interview please contact:  
ANSTO Media Adviser, Sharon Kelly on (02) 9717 9575 or 0400 394 085**

\*ANSTO is the Australian Nuclear Science and Technology Organisation, the country's national nuclear research and development organisation and the centre of Australian nuclear expertise – over 70 per cent of all radioisotopes used in Australian nuclear medicine are made in ANSTO's reactor