



Fukushima Reconstruction and Revitalization Unit

Overview

Under the “Great East Japan Earthquake Reconstruction Project,” the reconstruction and revitalization of Fukushima is a key social issue. Because of the accident at the Fukushima Daiichi Nuclear Power Station, a large amount of radioactive material (mainly radioactive cesium (Cs)) was discharged into the environment, and contaminated water and debris generated by melting fuel made it difficult to decommission the reactor. In this research unit, we are pursuing the following three topics to support reconstruction and revitalization of Fukushima.

1. Promoting the decommissioning of the reactor, including treating contaminated water and solid waste, and removing debris
2. Resolving issues related to wide-area contamination caused by the radioactive cesium
3. Rehabilitating industry and developing human resources based on the Innovation Coast Framework

Research goals

For our unit's three research topics, we seek to achieve the following goals:

1. Establishing volume reduction and stabilization/solidification techniques for the secondary radioactive waste generated by contaminated water from the Fukushima Daiichi Nuclear Power Station or from treatment of contaminated water generated when removing debris. We will provide vital support in decommissioning the Fukushima Daiichi Nuclear Power Station by gathering expertise at Tokyo Tech for areas such as development of decommissioning techniques appropriate for the disaster site and based on collaboration with TEPCO (Figure: Research outline).
2. Developing basic fundamental technology for recovery and high-volume reduction/solidification methods of radioactive Cs from the 750,000 m² of highly contaminated soil, which requires physiochemical treatment (Figure: Researching treatment of contaminated soil). This will make it possible to finalize disposal within 30 years as promised by the national government.
3. Gathering academic knowledge to reconstruct the living environment in the Hamadori area, which was severely damaged by the nuclear power station accident, promoting industrial development contributing to the Innovation Coast Framework, and fostering necessary human resources for the reconstruction of Fukushima.

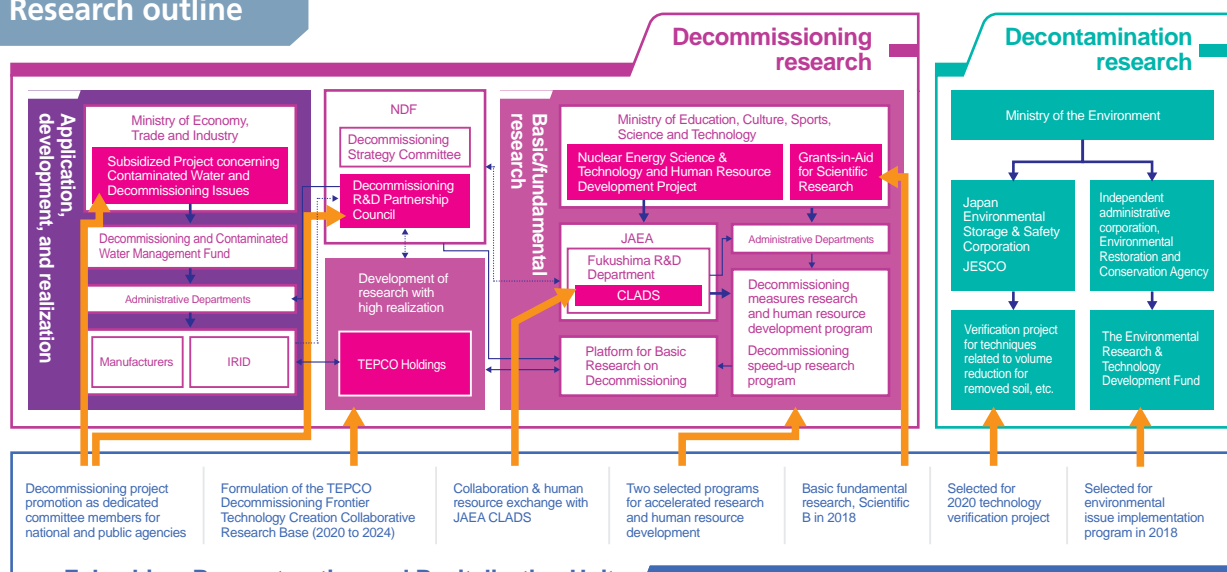


Research Unit Leader **Kenji Takeshita**

Profile

- October 2019: Senior Aide to the Executive Vice President for Research, Tokyo Institute of Technology
- April 2018: Director (Professor), Laboratory for Advanced Nuclear Energy, Tokyo Institute of Technology
- April 2010: Professor, Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology
- November 2002: Associate Professor, Chemical Resources Laboratory, Tokyo Institute of Technology
- June 1996: Assistant Professor, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology
- June 1992: Senior Researcher, Institute of Research and Innovation
- April 1987: Researcher, Institute of Research and Innovation

Research outline



Bringing together industry, government, and academia to decommission disaster-stricken reactors and revitalize the surrounding community



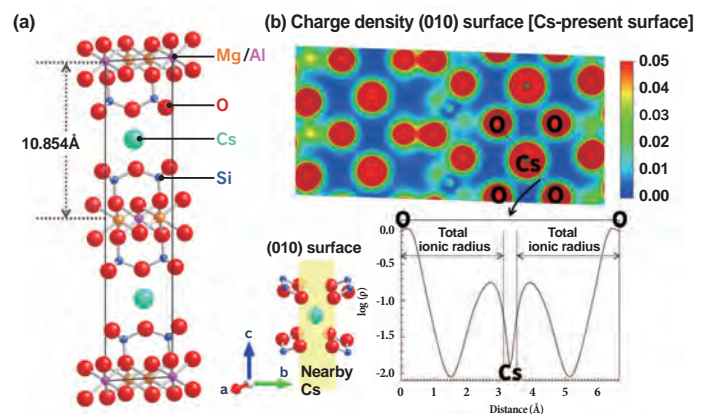
Q What are the strengths of this research unit?

1. We have established a collaborative research base with TEPCO (5-year plan from fiscal 2020 to 2024), allowing Tokyo Tech faculty members to work directly with engineers from TEPCO to identify research areas based on the needs at the actual site.
2. Two of our topics were selected for large-scale basic fundamental research (MEXT: Nuclear science and technology / human resources development promotion project based on collected wisdom), so we can proceed with basic fundamental research necessary for promoting decommissioning. Moreover, research unit leader Kenji Takeshita is a member of the "Subsidized Project concerning Contaminated Water and Decommissioning Issues" by METI and of the "Decommissioning R&D Partnership Council" of the Nuclear Damage Compensation and Decommissioning Facilitation Corporation (NDF), providing access to the latest information as we proceed with research on the decommissioning project.

Q What is the path to achieving the unit's goals?

1. Towards resolving wide-area contamination issues at Fukushima, we conduct research through the "Verification project for techniques related to volume reduction for removed soil, etc." carried out by the Japan Environmental Storage & Safety Corporation under the Ministry of the Environment. Furthermore, we are conducting research using equipment at the interim storage facility in accordance with the policies of the Ministry of the Environment.
2. We will continue appropriate development of decommissioning techniques based on the needs of the disaster site learned through the collaborative research base with TEPCO and based on the latest decommissioning policy acquired through the council of the NDF and Agency for Natural Resources and Energy.

Researching treatment of contaminated soil



Estimated stable structure (a) and charge density (b) of Cs⁺ absorbed in contaminated soil by first-principles calculation (vermiculite)

Q What impact will the unit's research have on society?

The reconstruction and revitalization of Fukushima after the 2011 Great East Japan Earthquake and subsequent accident at Fukushima Daiichi Nuclear Power Station is one of the most important issues facing the national government. In our research unit, we will pursue three research topics: (1) purification of contaminated soil across Fukushima Prefecture, and high volume reduction and solidification / final disposal of radioactive materials, (2) treatment and disposal of secondary waste from water treatment for promoting decommissioning of the Fukushima Daiichi Nuclear Power Station, and (3) industrial rehabilitation of the Fukushima coast (Innovation Coast Framework), including development of necessary human resources for quickly resolving this national issue. The techniques developed here could be applied in initial responses to future accidents that may occur at any of the 400 nuclear power stations operating throughout the world. The work of our research unit would support emergency preparedness, and thereby have a significant impact on society.

Contact us

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