

## **Rare Metals Extracted from Hot-spring Water Using High-performance Fabric**

**Using a metal-collection fabric jointly developed with local companies, the Takasaki Advanced Radiation Research Institute of the Japan Atomic Energy Agency (JAEA) has succeeded in collecting the rare metal scandium (Sc) from hot-spring water in Kusatsu (Gunma Prefecture north of Tokyo). The collection was made possible using a metallic fabric – developed with radiation graft polymerization technology – that is resistant to both high temperatures and high acidity. Scandium has recently drawn attention for its applications in lighting and fuel cells.**

JAEA had already demonstrated collection of rare metals from seawater, including vanadium (V) and uranium (U), using collection materials developed with the same technology. One ton of hot spring water in Kusatsu contains approximately 17mg of scandium. A metallic collection fabric resistant to temperature and acidity is a prerequisite to selectively extracting scandium alone. At the Yukawa River, into which numerous hot springs flow, more than 95% of the scandium was able to be continuously extracted, illustrating the excellent performance of the metallic collection fabric.

By increasing the scale of the device, it should be possible to collect about 200kg of scandium per year – Japan's estimated annual domestic requirement.

Technology developed by local companies played a major role in the development of the collection material, particularly in the filters used to remove the substantial matter also suspended in the hot spring water.

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