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Nagase & Co., Ltd.

Nagase to Participate in Development of a Bioprocess for Rare Metal Recovery

Nagase announces that it will participate in a project to develop a bioprocess for rare metal recovery together with three other parties: a research group led by Professor Yasuhiro Konishi at the Osaka Prefecture University's Graduate School of Engineering, Morishita Jintan Co., Ltd., and Nagase ChemteX (a subsidiary of Nagase & Co., Ltd.). Specifically, the project aims to enhance the viability of an environmentally friendly, high-efficiency rare metal recovery process that uses microbes. The project is backed by the New Energy and Industrial Technology Development Organization (NEDO) under the project name Development of Viable Rare Metal Substitutes and Technologies to Reduce Use of Rare Metals.

Rare metals are a set of scarce nonferrous metals, including platinum, palladium, gallium, and indium, used by industry. Amid concern about pressure on the global supply-demand balance, securing a stable supply of rare metals over the long term is a key issue for Japan. Against such a backdrop, attention is being refocused on means of recovering such scarce resources from discarded products and the environment.

Conventional recovery methods are problematic because of the energy costs involved and the need to use large amounts of hazardous organic solvents. Recovery methods using adsorbents and microbes have been proposed, but recovering substantial amounts of rare metals with such methods is difficult and recovery rates have yet to be improved.

By providing backing for development activities so far pursued individually by the participating companies, NEDO's project for the Development of Viable Rare Metal Substitutes and Technologies to Reduce Use of Rare Metals will help to achieve technological viability even sooner. Such activities include the development of rare metal substitutes, technologies for reducing the use of rare metals, and recovery technologies.

With this backing, the consortium hopes to enhance the viability of a completely new process for the selective recovery of rare metals that employs a capsule containing reducing microbes. The simple, one-step process is low energy (low cost), has only a small impact on the environment, and promises to work efficiently even with low concentrations of rare metals.

The process uses capsules containing high concentrations of microbes that draw in nonferrous rare metal ions, enabling the efficient recovery of substantial amounts of rare metals. These biocapsules were developed by the research group led by Professor Yasuhiro Konishi at the Osaka Prefecture University's Graduate School of Engineering and Morishita Jintan Co., Ltd. In addition to rare metals, the consortium also hopes to apply this method to the recovery of other materials, including rare earth elements in general.

This project promises to enable the substantial reuse of rare metals currently left untapped in vast numbers of discarded high-tech devices, often collectively known as “urban mines.”

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Profile of Nagase & Co., Ltd.

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