

Innovation in manufacturing for new process of sustainable resource recycle

Development of Separation and Analysis of Rare Metals Using Phase-Transition-Based Direct Extraction From Aqueous Solutions

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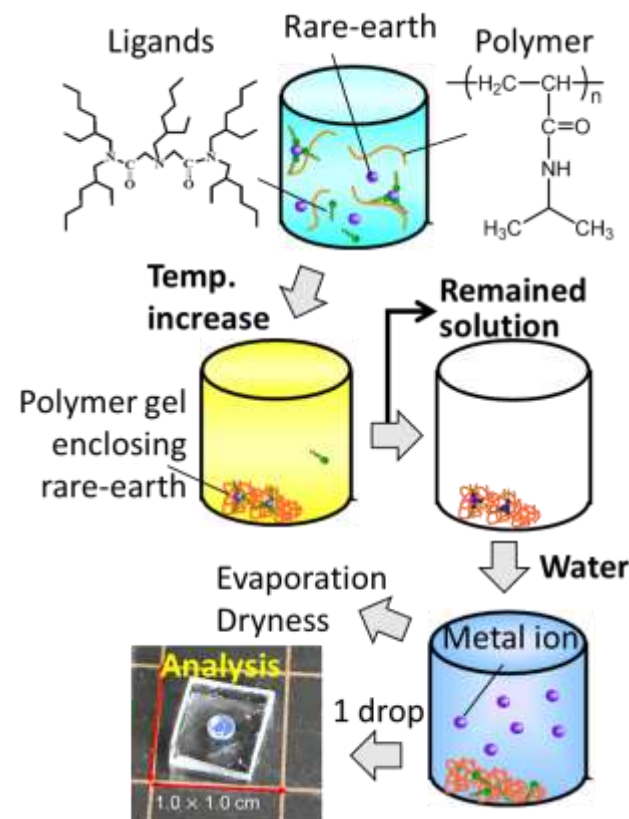
Summary :

General separation methods of rare-earth elements have some disadvantages such as requirement of time-consuming chemical operations and production of large amounts of secondary wastes.

Herein, we aim to develop novel environmentally-friendly separation and analysis system of rare-earth elements by using phase transition phenomena of stimuli-responsive polymers. This system makes it possible to separate directly rare-earth elements from waste solutions and to analyze rapidly the concentrations of the elements.

Specific research topics are as follows:

- Clarification of rare-earth separation mechanism depending on the interactions among polymers, hydrophobic ligands, and rare-earth elements in aqueous solutions, and design of the separation process
- Construction of prototype instrument which can realize high-throughput/multi-stage treatment and online monitoring of target rare-earth elements.



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