Tohoku Univ. Technology

Recovery of recycled nickel

Selective electrodeposition of high-purity nickel from nickel-cobalt mixed aqueous solutions using general-purpose electrodes, without solvent extraction

Overview

Nickel and cobalt demand is surging for lithium-ion battery cathode materials, driving the need for efficient separation and refining technologies. Due to their similar metallic and ionic properties, making separation challenging, the current mainstream approach relies on solvent extraction exploiting differences in complex formation behavior. However, this method involves multiple steps, uses environmentally burdensome organic solvents, and requires additional refining, such as electrowinning, to isolate the metals in pure form.

This invention provides a low-cost, low-environmental-impact method for selectively electrowinning nickel from nickel–cobalt mixed aqueous solutions, characterized by a simple electrolytic process using general-purpose electrodes. In the examples, electrodeposited nickel with a purity of over 99.4% was obtained.

Ni/Co electrodeposition behavior

As the patent application has not yet been published, technical details—including the application specification—will be disclosed after the conclusion of a technology transfer agreement. Please feel free to contact us for further information.

Product Application

- Lithium-ion battery cathode recycling
- Nickel plating wastewater treatment
- Electronic waste recycling
- Stainless steel feedstock

Related Works

IP Data

IP No. : JP2025-171051
Inventor : ADACHI Ken, SHIBATA Etsuro, MIYAMOTO Masayuki
Admin No. : T25-067

Contact

Tohoku Techno Arch Co., Ltd.
Please visit CONTACT here