

Institute of Chemical Engineering

Adres artykułu: <https://iich.gliwice.pl/en/article/anthranilic-acid-based-imidazolium-ionic-liquids-design-synthesis-characterization-and-application-in-co2-and-ni2-separation-from-mixture-1>

Anthranilic Acid Based Imidazolium Ionic Liquids: Design, Synthesis, Characterization, and Application in Co²⁺ and Ni²⁺ Separation from Mixture

Publication date:	24.03.2025
Publication title:	Anthranilic Acid Based Imidazolium Ionic Liquids: Design, Synthesis, Characterization, and Application in Co²⁺ and Ni²⁺ Separation from Mixture
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Journal information:	Journal of Solution Chemistry

Anthranilic acid (2-amino benzoic acid), a medically important compound, is derived from indigo dye (extracted from *Indigofera tinctoria*) exhibits potential to form complexes with transition metals. We have used sodium salt of anthranilic acid as anion to prepare a new, C₂-symmetrical, third-generation, hydrophobic task-specific Ionic Liquid (IL); dioctylimidazolium anthranilate [DOIM][AN] and successfully investigated its ability to selectively extract Co²⁺ and/or Ni²⁺ from their aqueous solutions. Co²⁺ and Ni²⁺, both exhibit similar physical and chemical properties. The IL showed good efficiency in the separation of Co²⁺ and Ni²⁺ from their aqueous solutions within five minutes at room temperature. The IL was recycled under basic conditions and reused. The extraction efficiencies were determined through Atomic Absorption Spectroscopy (AAS). The characterization of IL was done through Electron Spray Ionization Mass spectroscopy (ESI-MS), Nuclear Magnetic Resonance (NMR), and Infrared spectroscopic (IR) techniques. The rheometric analysis revealed that IL has Newtonian-type behavior.

Metryczka

Published by:	Marek Tańczyk
Published at:	08.05.2026 11:52
Number of views:	7