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Dissolution of model coal minerals (gypsum and pyrite) in RuCl₃ solution—a demineralisation approach

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Abstract

Gypsum accounts for sulfate sulfur and pyrite for pyritic sulfur, are occurring in coal; dissolution of their model samples were carried out using RuCl₃ solution. The extent of soluble calcium from gypsum at 25 °C was 97.67–98.26% in 15–60 min while the extent of soluble iron from pyrite was 0.35–0.65% at 25 °C and 3.90–6.31% at 80 °C in the same time period. The rate constants for gypsum dissolution are exceedingly higher (1.12–4.23)10⁻³ s⁻¹, than those observed for pyrite, (1.58–3.92)10⁻⁶ s⁻¹. It is observed that RuCl₃ is a suitable reagent for the removal of gypsum by dissolution process.

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Author Keywords: Dissolution kinetics; Ruthenium chloride, gypsum, pyrite; Demineralisation

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