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化学リーチング手法による高濃度レアアース泥からのレアアース抽出技術
Chemical leaching experiments on the highly REY-rich mud collected near the Minami-torishima Island.

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Since the discovery of rare earths and yttrium (REY)-rich mud distributed widely on a deep seafloor in the Pacific Ocean (Kato et al., 2011), it has received broad attention as a new resource for REY. More recently, during research cruise KR13-02 of R/V Kairei, extremely REY-enriched deep-sea mud containing more than 6,000 ppm total REY (∑REY) was collected near Minamitorishima Island, northwestern Pacific Ocean. One of the key issues on the future development and utilization of the new deep-sea mineral resources (REY-rich mud) is to establish a procedure to extract REY from the mud. Kato et al. (2011) showed that chemical leaching is an effective means to extract REY from REY-rich mud. In this study, therefore, we conducted series of leaching experiments on highly REY-rich mud (∑REY ≈ 3,500 ppm) collected near Minamitorishima Island to determine the optimum conditions of REY leaching. Our results showed that more than 95% and 80 % of ∑REY can be recovered by hydrochloric acid and sulfuric acid, respectively. REY recovery was at the highest under the conditions of the lower acid concentration (0.25-0.5 mol/L), shortest leaching time (- 5min), and room temperature (25 ℃). These leaching conditions are strong advantages for the development of REY-rich mud.

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