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Origin of lithium in Uyuni salt flat, Bolivia: constraints from Li isotope ratio

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Lithium (Li) is one of important natural resources. The South American salt lakes contain abundant Li. The Li enrichments of the South American salt lakes are attributed to the effective drying of the influent Li-enriched river water (Rettig et al., 1980; Alonso and Risacher, 1996). The Li contents in the Grande river that flows into the Uyuni salt flat range from 3.1 to 26ppmLi (Rettig et al., 1980). Because the average Li content in river water is 1.5 ppb (Huh et al., 1998), the high Li content in the Grande river cannot be explained as the simple rock-fluid interaction at low temperature. Accordingly, the high Li content in the Grande river should due to the Li-enriched volcanic fluid and/or Arima-type deep fluid. To constraint on the origin of Li in the Uyuni salt flat, the author analyzed Li isotopic compositions of salt and brine from the Uyuni salt flat. The author will discuss the origin of Li in the Uyuni salt flat based on the Li isotopic data on Uyuni salt flat, volcanic fluid, non-volcanic Arima-type deep fluid, mud volcano fluid.

Reference:

Rettig et al., 1980, Chem. Geol. 30, 57-79.

Alonso and Risacher, 1996, Revista Geol. Chile 23, 113-122.

Huh et al., 1998, GCA 62, 2039-2051.

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