

## Geochemical Approach of Rare Earth Element Distribution: A Case Study from Lake Acigol, Denizli, Turkey

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**Abstract :** About 50 mg lake sediment was digested in two steps. While first stage was completed with 6 ml 37% HCl, 2 ml 65% HNO<sub>3</sub> and 1 ml 38-40% HF in an pressure and temperature controlled Teflon beaker using Berghoff Microwave™ at average 135°C, digestion procedure was completed with the addition of 6 ml 5% boric acid solution. REE contents of sediment samples were determined by Perkin Elmer DRC II ICP-MS in Geochemistry Research Laboratories (JAL/GRL) of Faculty of Mines, Istanbul Technical University. Chondrite-normalized REE patterns of Lake Acıgöl sediments show generally high abundance of REE compared to chondritic concentrations, with particular enrichment in LREE [(La/Lu)N = 4.85-19.90], [(La/Lu)N = 7.09-15.14], [(La/Lu)N = 9.42-15.52] and [(La/Lu)N = 7.69-15.63] for the surface sediment and 0-10 cm-, 10-20 cm- and 20-30 cm-subsurface sediments respectively. Also these samples showed flat HREE normalized to chondrite as (La/Sm)N ranging from 2.98 to 4.8 for surface sediments and for subsurface sediments from 3.28 to 3.97 (0-10 cm), 3.57 to 3.94 (10-20 cm) and 3.36 to 3.94 (20-30 cm) while (Gd/Yb)N ranging from 2.14 to 2.93, from 2.03 to 2.76, from 2.26 to 2.79 and from 2.05 to 2.76 from the surface and subsurface sediments respectively. Moreover, their REE profiles are similar to profiles of the continental collision basin (CCB) with negative Eu anomalies. In addition, their REE patterns illustrate generally low abundance of REE compared to concentrations of NASC, PAAS and UCC with very slight enrichment of LREE and positive Eu\* anomalies. Therefore there is no comparable between our samples of surface and subsurface sediments and these types of international sediments.

**Keywords :** chondrite-normalized REE patterns, hypersaline lake, surface sediments, subsurface sediments, Lake Acıgöl, Turkey

**Conference Title :** ICESCC 2014 : International Conference on Earth Science and Climate Change

**Conference Location :** Cape Town, South Africa

**Conference Dates :** November 06-07, 2014