Geochemistry of the Basal Anhydrite (Asmari Formation) in the Bangestan, Safid, Asmari and Anaran anticlines at the Zagros sedimentary basin, SW Iran

S. Rahmani[1] and B. Rafiei*[2]

1,2- Dept., of Geology, Faculty of Science, Bu-Ali Sina University, Hamedan

* **b_rafiei@basu.ac.ir**

Recieved: 2018/1/23 Accepted: 2018/7/15

Abstract

Basal Anhydrite is the main evaporite unit presents at the lowermost part of the Asmari Formation (Oligo-Miocene) which its geochemical characteristics have not been studied yet. In this study, seven outcrops, including Bangestan, Safid, Asmari and Anaran anticlines from the Zagros sedimentary basin were selected and their geochemical characteristics and depositional conditions were determined. The mineralogical (XRD, BSE-EDX) and elemental analysis (ICP-OES) were performed. The petrography and mineralogy studies show that the secondary gypsum with alabastrine texture was produced by hydration of anhydrite during exhumation. In order to perform geochemical analysis, four outcrops (Bulfares, Putu, Geletorsh and Anaran) were selected. Based on elemental analysis, calcium and sulphur are the most important elements that found as gypsum. The highest amounts of elements strontium, magnesium and sodium and the lowest amount of iron were found in the Bulfares section, which indicates the effects of diagenetic and biological processes and shallow depositional environment. The amounts of strontium, magnesium and sodium elements decrease and the amount of iron increases toward Geletorsh section (north part of the basin), which indicates deepening of the basin in this area. Putu and Anaran sections show variable elemental changes that demonstrate the area is mostly affected by hydrological conditions. The concentration of lithium is low in the studied sections, which can be attributed to excess evaporation.

Keywords: Asmari Formation, Basal Anhydrite, geochemistry, Zagros