Geochemical study Soltanieh Formation limestone deposits to determine the primary mineralogy and the mineralogical processes of limestone (SW Urmia)

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Soltanieh Formation deposits in the south west of Urmia mainly carbonate rocks and shale alternation is made. Soltanieh Formation calcareous rocks mainly influenced meteoric diagenetic an open system are located. According to the distribution main and secondary elements and isotopes of oxygen and carbon range of calcareous deposits formation Soltanieh comparable Gordon Limestone of Tasmania with the mercenaries and the mineralogical composition is aragonite. Mineralogical composition of aragonite limestone Neoproterozoic other parts of the world already has been confirmed by other researchers [1]. These studies indicate that the limestone, such as Gordon Limestone of Tasmania, Meteoric affected processes are located. Soltanieh Formation limestone samples of oxygen and carbon isotope values are light to light? 13 °C (mean (-4.57 ‰ VPDB Soltanieh formation in the samples due to the severe effect is diagenesis meteoric. Changes in Sr/Mn indicates high dissolution rate This is limestone. temperature of the limestone formation based on the heaviest isotope of oxygen (equivalent to ‰ 83/5-) and? w sea water (equivalent to 1 ± 3 -), respectively 23 and 31 °C has been calculated.

[1] Fairchild & Spiro (1987) *Sedimentology* **34**, 973-989.

Europium structural role in silicate glasses

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Rare Earth Elements (REE) have demonstrated to be important geochemical indicators; in fact, the distribution of REE in igneous rocks are frequently used to constrain the mineralogy of the source materials, the degree to which magma composition has been modified by crystal fractionation, and to identify the mineral phases removed from the magma during differentiation. Moreover, the Eu redox ratio can be used to constrain the formation conditions within a very large range of oxygen fugacity down to few log units below the Fe/FeO buffer. The $Eu^{+2}/(Eu^{+2} + Eu^{+3})$ ratio is therefore very useful in the study of meteoritic material and in studying planetary evolution. A complete understanding of transition and REE elements is important for the geochemical and petrological interpretations of magmatic processes and partition properties between melt and crystals. To this aim, synthetic silicate glasses corresponding to compositions relevant for the Earth sciences were used to study the dependence of the redox states of Eu on the bulk melt composition and at different values of oxygen fugacity (from air to IW-2). The samples have been analyzed via Eu LIII-edge X-ray Absorption Spectroscopy (XAS) to study the Eu oxidation states and local environments. Eu LIII-edge XANES peak analysis allowed the quantitative assessment of Eu redox ratio. XANES spectra vary systematically with composition and with f_{O2} (log f_{O2} ~ 0 to –11.6) indicating changes in the Eu oxidation state. The intensity of the shoulders on the absorption edges were quantified and used to determine $Eu^{+2}/(Eu^{+2} + Eu^{+3})$ ratio. Moreover, the local environment of Eu was determined by EXAFS (Extended X-ray Absorption Fine Structure) analyses, highlighting the different Eu behaviour as function of the f_{O2}. This work has clearly demonstrated that for a better interpretation of the Eu anomalies observed in rocks and minerals, which are often used to constrain magmatic evolutions of igneous regions, the melt composition and the redox condition must be taken into consideration.