

## **Application of Oxygen and Carbon Isotopes in Separation of Low and High Temperature Dolomites in Northeast of Iran**

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**Abstract:** this study is focused on dolomites of the Chehel-Kaman Formation (Upper Paleocene) that is located in NE Iran. Field and petrographic studies lead to distinguish  $d_1$  and  $d_2$  dolomites.  $d_1$  is fine crystals (lesser than 10 micron) and is associated with evaporitic sediments, and  $d_2$  in addition to fine crystals, contains coarser crystals (50-80 micron) without evaporitic sediments. Also, oxygen isotope of  $d_1$  is heavier than -2.5 ‰ PDB and oxygen isotope of  $d_2$  is lighter than -6.5 ‰ PDB. Carbon isotope in these dolomites ranges between +1.8 ‰ to +3.5 ‰ PDB. These data along with CL observation show that  $d_1$  dolomites are formed in lower temperature (calculated temperature is 26°C) within supratidal environment, while  $d_2$  dolomites are formed in higher temperature (calculated temperature is more than 72°C) during burial stage.