

## Carbon, Oxygen and Strontium Isotope Compositions and Fluids Source of Ordovician Dolomite in Ordos Basin, China

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$\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  ratio of dolomite are three important indicators for identifying source and characteristics of fluids related to formation and evolution of dolomite. The Ordovician dolomite in Ordos Basin has been known as one of the largest gas producers in China but their mechanism of dolomitization has no systematic research. The C, O, and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotope characteristics of different lithology were compared, aiming at better constraints on the diagenetic environment of carbonate rocks. Petrography and diagenesis analysis of more than 200 meters of core from Ordos Basin shows that these dolomites has the following geochemical characteristics: 1) The results show that  $\delta^{13}\text{C}$ (PDB) concentration is between -5.2‰ and 2.8‰, and  $\delta^{18}\text{O}$  (PDB) concentration is between -9‰ and 2.4‰. 2) The Sr contents of these carbonates decrease significantly with enhancing dolomitization degree, from 1358  $\mu\text{g/g}$  of limestone to 94  $\mu\text{g/g}$  of dolomite, while the  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios increase from 0.70758 to 0.71991. Dolomite C, O, and Sr isotopes show big differences indicating those dolomite may form from: (1) freshwater with low salinity; (2) the mixing of basinal brines; (3) the mixing hypersaline brine with seawater.

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[2] Shields G A, Carden G A F, Veizer J, et al. (2005). Sr C and O isotope geochemistry of Ordovician brachiopods: A major isotopic event around the middle-later Ordovician transition. *Geochimica et Cosmochimica Acta*, 67 (11) : 2025-2033