

## **Geochemical characteristics of Ordovician dolomite and its genesis mechanisms of in Gucheng area, East Tarim Basin**

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Since high production gas reservoir was found in Yingshan Formation in Gucheng Area, Ordovician dolomite reservoir have become important exploration target in east Tarim Basin. But because of tectonic movements and complex diagenesis throughout long geological history of deep buried Yingshan Formation, the origin of its dolomite reservoir still in controversy. To understand the geochemical feature and formation mechanism, by means of the core and thin section observation, the Ordovician dolomite in the study area is divided into 4 genetic types: micro-fine crystal dolomite (D1), fine-medium crystal euhedral dolomite (D2), medium-coarse crystalline dolomite (D3) and saddle dolomite (D4). In combination with the cathodoluminescence analysis, trace and rare earth elements analysis, carbon and oxygen isotope analysis, the temperature measuring of fluid inclusions and X-ray diffraction order degree analysis and other geochemical analysis technologies, the Ordovician dolomite formation and dolomitization model were discussed. For micro-fine crystal dolomite (D1), the mechanism is high-salinity dolomitization of penecontemporaneous period. For fine-medium crystal euhedral dolomite (D2) is burial dolomitization. The medium-coarse crystalline dolomite (D3) can be divided into two types: D3I and D3II. The genesis mechanism of type D3I and type D3II are recrystallization by basic magmatic hydrothermal and acidic magmatic hydrothermal fluid respectively. The genesis mechanism of saddle dolomite (D4) is hydrothermal dolomitization by acidic magmatic hydrothermal fluid. It is preliminarily determined that fine-medium crystal dolomite with residual grain structure is the main carrier of the reservoir. Its formation is the result of penecontemporaneous dolomitization combine with later diagenesis alteration.