



## **The geochemistry characteristic and dating of cold seepage carbonates of the Pearl River Mouth Basin, eastern of South China Sea**

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Cold seepage carbonates are usually formed by the interaction of methane oxidizing archaea, sulfate reducing bacteria and cold seepage which contain abundant venting hydrocarbon gases. The presence of cold seepage carbonates on the seabed is one of the evidences that the area exist venting hydrocarbon gases, which are usually result by the dissociation of gas hydrate. The cold seepage property and fluid flow rate can influence the oxidation-deoxidation environment of the bottom water and sediment. Many previous studies focused on the mineral composition, microstructure, elemental composition, isotope composition of the cold seepage carbonates and isotopic dating for the cold seepage carbonates. The isotopic dating for the cold seepage carbonates can provide the information of the gas hydrate formation and dissociation in some area of the South China Sea. High precision TIMS-U dating and  $^{14}\text{C}$  dating are used as routine method for the dating of the Quaternary carbonates and fossils. The cold seepage carbonates in the study include the samples collected by ROV on the seabed and the drilling for gas hydrate in the Pearl River Mouth Basin, eastern of the South China Sea. The authigenic carbonate occurred in different depth in the A, B and C drilling site. They may be represent different events of gas hydrate formation and dissociation in the Quaternary. The dating study for all the cold seepage carbonates can provide the relative accurate eras of the gas hydrate dissociation events in certain area of the South China Sea.