ON BASIN FLUID AND ITS ORE-FORMING PROSPECT---WITH CASE STUDIES IN CHINA

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Basin fluids are refereed to various fluids active during diagenetic-epigenetic processes of sediments, including aqueous solutions and hydrocarbon fluids. In China there are numerical sediment-hosted ore deposits showing genetic connection with basin fluid. They often distinguish themselves from those reported in international publications through distinct metal assemblages, such as Sn-Cu-Ag-Pb-Zn-As, Sb, W-Sb-Au, Sn-Sb-Pb-Zn-Cu, Fe-Sn, and sediment-hosted micro-disseminated gold etc. All the ore-bearing basins are extensional basin superimposed up on continental crust. Stratiform ore bodies often occur on marginal slope of submarine highs controlled by synsedimentary faults, and scarcely show relation to magmatic intrusions. Abundant synsedimentary-syndiagenetic and liquefaction fabrics indicate strong synsedimentary faulting and fluid migration. High content of organic matters and numerical biological fabrics reveal genetic connection between ore-formation and sedimentary organic matters. Geochemical studies imply that ores and their hostrocks underwent similar processes. Interesting is that some of the ore-bearing basins are terrestrial basin. Our research strongly implies that these deposits might be formed through similar processes of basin fluids just as oil during sedimentary basin evolution. Oil is sealed basin fluid, while metal ores are solid precipitation of aqueous basin fluid. Organic compounds in basin fluids contribute a lot to the reactivation, transportation and precipitation of metals. During diagenetic compaction, both oil and clay water are squeezed out from hydrocarbon-producing beds. But afterwards during migration and accumulation, oil and ore-forming solution are effectively separated. In one word, basin fluid might be responsible for various kinds of sediment-hosted ore deposits, much more complex and important than expected ever before.