SEDIMENT-HOSTED MICRO-DISSEMINATED GOLD DEPOSITS IN CHINA

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Over 150 sediment-hosted micro-disseminated gold occurrences were discovered predominately in several sedimentary basins in South China, and most recently in North China too. They make up a very important part of Chinese gold product. Since 1985 we carried out a systematic geological, fabric, and geochemical investigation on about 30 deposits. All the ore-bearing basins are extensional basin superimposed up on continental crust. Ore bodies occur in siltstone, mudstone, and chert breccias, often on marginal slope of submarine highs controlled by synsedimentary faults. Numerous synsedimentary-syndiagenetic fabrics of sulfides such as lamination, convolute bedding, slumping texture, diagenetic crack, soft deformation etc., indicate strong synsedimentary faulting. Abundant fluid-escape and liquefaction fabrics imply strong fluid migration. High content of organic matters and various kinds of biological fabrics in ores reveal the genetic connection between ore-formation and sedimentary organic matters. Mineral and alteration assemblages are typically low-temperature. Ore and its sedimentary hostrock shows similar trace elements, REE and S isotope features implying that both of them are probably product of similar processes. C-O isotope study reveals that CO2 in ore-forming fluids might be mainly produced by dissolution of surrounding sedimentary carbonate rocks.Our research indicate genetic relationship between ore formation and basin evolution, and gives rise to a new idea that these deposits could be formed by basin fluid, in a similar way like oil accumulation in a sedimentary basin. Oil is sealed basin fluid consisting of hydrocarbon; meanwhile, metal ores are precipitation of basin fluid consisting of water and dissolved ore-building metals.