A SUPERLARGE GERMANIUM DEPOSIT HOSTED IN COAL SEAMS, CHINA

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As a dispersed element, germanium is hard to concentrate on a considerable scale. The Linchang germanium deposit, one of the largest germanium deposits in the world, has been discovered recently in China, which occurs in the Tertiary fault-depression basin at Bangmai, Yunnan Province, with the proven reserves of germanium reaching almost 800 tons. Germanium in the deposit is present in the coal seams of the fault-depression basin, with the grade generally being n×100ppm.

Mineralized coal seams are interbedded with layered siliceous rocks and no germanium mineralization is recognized in coal seams without layered siliceous rock interbeds. Our studies have shown that: (1) The content of germanium in basemental granite of the basin is 2-3 times higher than the clarke value and therefore it is considered that the basemental granite is the source of germanium; (2) The solubility of germanium in solutions tends to increase with the rise of solution temperature. In the deposit the layered siliceous rocks interbeded with coal seams are of hydrothermal sedimentation origin. Si-rich hydrothermal fluid responsible for the siliceous rocks carried a large amount of germanium required for the formation of the ore deposit; (3) Coal seams are the most favorable country rocks for the formation of germanium deposits. Under favorable geological conditions organic matter present in the coal seams could play an important role in fixing germanium from surrounding solutions. The aggregation of the above three factors led to the formation of the superlarge Linchang Ge deposit.