# Structural constraints on the genesis of Dashankou gold deposit in the Southwest Tianshan, Xinjiang, NW China

YI-TIAN WANG[1], JINGWEN MAO[1,2], JINXING FENG[3], FUQUAN YANG[1] AND HONGBING LI[3]

[1]Institute of Mineral Resources, Chinese Academy of Geological Sciences, Beijing 100037, China (wyt69@263.net)
[2]Faculty of Geosciences and Resources, China University of Geosciences, Beijing 100083, China
[3]The No. 3 Geological Party, Xinjiang Bureau of Geology and Mineral Resources, Kuerle 841000, Xinjiang, China

The Dashankou gold deposit, located in the Southwest Tianshan, Xinjiang, NW China, is strictly developed within the NWW-trending Wulansaier-Dashankou ductile shear zone. The host rock is a suite of Upper Silurian-Lower Devonian carboniferous fine clastic rocks with low metamorphic grade. Several mylonitized dikes of dacite porphyry and diorite develop in the middle of shear zone with the same trend as the tectonic line. The hydrogen and oxygen isotopic compositions of quartz fluid inclusion (δD＝-74～-51‰, $\delta^{18}O_{SMOW}$ ＝ 15.9～17.8‰, and $\delta^{18}O_{H2O}$ ＝ 5.4～9.1‰) indicate that ore-forming fluids are the mixtures of both magmatic and metamorphic water. The ankerite's carbon and oxygen isotopes ($\delta^{13}C_{PDB}$ ＝ -3.3～-2.8‰, and $\delta^{18}O_{SMOW}$ ＝ 14.1～14.5‰) imply mixing carbon from magmatic rocks and the strata. The evidence shows that gold ore-forming fluids dominantly consist of magmatic fluids and the tectono-metamorphic fluid derived from the shear process. The ore-controlled shear zone is originated from ductile deformation at the middle-deep tectonic level, and during the uplifting, deep-seated fluids and metallogenic materials migrate upwards along with emplacement of the intermediate-acidic dikes, which fill and deposit inside shear fractures and contacts of the dike resulted from the superimposed brittle-ductile deformation, and gold-bearing quartz vein and stockwork take into form broadly. Therefore, the Dashakou gold deposit is a product of syn-tectonic mineralization governed by the shear system.

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