高永宝,李文渊,张照伟. 2011. 祁漫塔格白干湖-戛勒赛钨锡矿带石英脉型矿石流体包裹体及氢氧同位素研究. 岩石学报, 27(6): 1829-1839

祁漫塔格白干湖-戛勒赛钨锡矿带石英脉型矿石流体包裹体及氢氧同位素研究

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基金项目：本文受国家自然科学基金项目(40772062)、地质大调查项目(1212011121088、1212011121092、1212010911032、1212010918024)和"十一五"国家科技支撑计划项目(2006BAB01A01)联合资助.

摘要：

对祁漫塔格白干湖-戛勒赛钨锡矿带石英脉型矿石石英中流体包裹体的岩相学特征研究表明,包裹体类型主要分为富液相两相包裹体、含CO_2、CH_4三相包裹体及单相H_2O溶液包裹体3种类型,前2类为原生包裹体,与成矿关系密切;富液相两相包裹体均一温度峰值为220~260℃,盐度为0.88%~20.82% NaCleqv,流体的总密度为0.72~1.06g·cm^{-3},液相成分主要是水溶液,气相成分含有部分CO_2及CH_4;含CO_2、CH_4三相包裹体完全均一温度峰值为260~280℃,盐度为6.63%~15.21% NaCleqv,流体的总密度为0.60~0.91g·cm^{-3},气相成分以CO_2、CH_4为主,次为H_2S、N_2及少量的H_2;液相组分以H_2O为主,次为CO_2及少量的CH_4、H_2S。各矿区石英脉型矿石的$\delta^{18}O_{H_2O}$为4.02‰~6.32‰,δD为-75.5‰~-42.8‰,均显示出岩浆水的特征。总体而言,石英脉型矿体的初始流体主要来自酸性岩浆热液,为中高温(220~280℃)、中盐度(10%~14% NaCleqv)、低密度的NaCl-H_2O-CO_2体系。钨锡成矿与区内加里东期岩浆作用密切相关,石英脉型矿石形成时流体处于不均匀的状态,成矿流体不混溶作用以及温压条件、pH、Eh、f_{O_2}、f_{S_2}等的变化是石英脉型钨锡矿沉淀的主要原因。 图1 白干湖-戛勒赛钨锡矿带区域地质简图(据刘贵忠等,2007修改) Ⅰ-塔里木陆块;Ⅱ-柴达木陆块;Ⅲ-昆仑造山带;Ⅲ$_{1-1}$-北祁漫塔格早古生代岩浆弧;Ⅲ$_{1-2}$-中昆仑微陆块(早古生代、晚古生代复合岩浆弧);Ⅲ$_{1-3}$-昆南早古生代增生楔;Ⅲ$_{2-1}$-南昆仑晚古生代残留弧;Ⅳ-阿尔金早古生代造山带;Ⅴ-巴颜喀拉晚古生代-中生代浊积盆地褶断带;①-祁漫塔格南缘早古生代构造混杂岩带;②-阿尔金南缘断裂;③-白干湖断裂;④-昆中蛇绿构造混杂岩带;⑤-康西瓦-木孜塔格-阿尼玛卿断裂带.1-第四系;2-新近系;3-侏罗系叶尔羌群;4-侏罗系大煤沟组;5-志留系白干湖组;6-长城系小庙岩组;7-古元古代阿尔金岩群;8-华力西期花岗岩;9-华力西期闪长岩;10-华力西期碱长花岗岩;11-华力西期花岗闪长岩;12-华力西期二长花岗岩;13-华力西期辉长岩;14-加里东期花岗杂岩;15-未确定性质的构造形迹;16-左行扭动构造形迹;17-左行岩石圈断裂;18-左行超岩石圈断裂;19-钨锡矿床 Fig.1 Regional geological map of Baiganhu-Jialesai W-Sn mineralization belts (after Liu *et al.*, 2007)

英文摘要：

There are three types of fluid inclusions in the quartz of quartz-vein ores, Baiganhu-Jialesai W-Sn mineralization belts, Qimantage: Liquid-rich two-phase inclusions, CO_2 and CH_4-rich three-phase inclusions and water inclusions, of which the first two types are primary inclusions and are closely related with W-Sn mineralization. The peak homogenized temperatures and salinity of liquid-rich two-phase inclusions in quartz, with liquid component of H_2O and gas component of CO_2 and CH_4, range from 220℃ to 260℃ and from 0.88% to 20.82% NaCleqv respectively, the total density of fliuds range from 0.72 to 1.06g·cm^{-3}. The peak homogenized temperatures and salinity of CO_2 and CH_4-rich three-phase inclusions in quartz range from 260℃ to 280℃ and from 6.63% to 15.212% NaCleqv respectively, the total density of fliud range from 0.60 to 0.91g·cm^{-3}. The gas components of CO_2 and CH_4-rich three-phase inclusions are mainly CO_2, CH_4 and less H_2S, N_2, H_2, while the liquid components are mainly H_2O and less CO_2, CH_4, H_2S. The value of $\delta^{18}O_{H_2O}$ and δD of quartz-vein ores range from 4.02‰ to 6.32‰ and -75.5‰ to -42.8‰ respectively, both of which indicate that the fluid is significantly magmatic water. In all, the initial fluid of quartz-vein ores is from magmatic hydrothermal fluid, which belongs to NaCl-H_2O-CO_2 system with middle-high temperature (220~280℃), middle salinity (10%~14% NaCleqv) and lower density. The W-Sn mineralization is closely related with the Caledonian magmatism, and the uneven fluids are captured when the quartz-vein ores formed. The significant factors of forming of quartz-vein ores are immiscibility of ore-forming fluids, and changes of temperature, pressure and value of pH, Eh, f_{O_2} and f_{S_2}.

关键词：流体包裹体 氢氧同位素 石英脉型矿石 钨锡矿床 白干湖 戛勒赛 祁漫塔格

投稿时间： 2010-10-10 最后修改时间： 2011-04-12

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