Stability of copper acetate at high *P-T* and implication for metallogeny

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Many metal deposits were formed by carbonic fluids (rich in CO_2 and/or CH_4) as indicated by fluid inclusions, but the precise role of CO_2 and CH_4 in metal mineralization remains unclear. The main components in fluid inclusions, e.g. H_2O, CO_2 and CH_4, correspond to the decomposed products of organic acids, which leads us to consider that in the mineralization process the organic acids transport and then discharge metals when they are stable and unstable, respectively. Here we show that the thermal stability of copper acetate solution at 15–350 °C (0.1–830 MPa) provides insight as to the role of organic acids in metal transport. Results indicate that copper acetate is stable under experimental conditions, verifying the possibility of 4copper transportation as acetate solution. The inferences and experiments in this contribution are supported by the frequent observations of fluid inclusions trapped in hydrothermal deposits, and provide a new dimension in the understanding of the role of CO_2 during mineralization.