CO2-rich fluid inclusions in ultrahigh-temperature granulite from Tonagh Island in the Archean Napier Complex, East Antarctica

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High density CO2-rich fluid inclusions are present in UHT granulites from Tonagh Island of Archean Napier Complex, East Antarctica. A study on different lithologies shows the common presence of CO2 fluid inclusions entrapped within various minerals. The estimated CO2 isochore intersects the anticlockwise P-T path of Tonagh Island at ca. 6~9 kbar at 1100C, which corresponds to the peak metamorphic conditions of Tonagh Island. We therefore infer that CO2 was the dominant fluid species present during the UHT metamorphism in Tonagh Island, and interpret that the fluid inclusions preserve traces of the syn-metamorphic fluid. The stability of anhydrous minerals in the study area might have been effected by the lowering of aH2O through the influx of CO2 at peak metamorphic conditions.