Igneous, alteration and deformation processes recorded in gabbros from an oceanic core complex in the Central Indian ridge

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Basalts, gabbros and peridotites were collected from an oceanic core complex (OCC) of the Central Indian Ridge by the URANIWA cruise (YK05-16 Leg.1) of JAMSTEC using submersible SHINKAI 6500. Here we report petrological characteristics of gabbros collected from the OCC. Gabbros are classified into pyroxene-gabbro, oxide-rich gabbro and 'heterogeneous gabbro' based on mineral assemblage and mode, although the mode, shape and grain size of minerals in gabbros are various. Some pyroxene-gabbros are cut by olivine gabbro and plagiogranite. Relationships between Mg# of clinopyroxene and An content of plagioclase show wide range of linear variation, indicating that these gabbros can be formed by a series of crystallization differentiation in a closed system. Petrological characteristics and mineral of the studied gabbros are similar to those from slow-spreading ridges (Dick et al., 2000). Amphibole and chlorite are commonly found in these gabbros. Amphiboles are classified into green-colored and brown-colored amphiboles. Green-colored amphibole is low in Al and Ti contents whereas brown-colored amphibole is high in these elements. Green-colored and brown-colored amphiboles were of hydrothermal and magmatic origins, respectively. Highly amphibolitized and deformed gabbros were collected from the top surface of the OCC. This indicates that infiltration of seawater and deformation locally occurred along a large fault during the formation of OCC.