

Mafic and ultramafic rocks along the southern Central Indian Ridge close to the Kairei Hydrothermal Field

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The central Indian Ridge (CIR) is situated at the north of the Rodrigues Triple Junction (RTJ) and is a slow- to intermediate-spreading mid-ocean ridge with a spreading rate increasing from 30 mm/year in full rate near the Equator to 49 mm/year in full rate at the RTJ. In the southern CIR near RTJ, the Kairei Hydrothermal Field (KHF) was discovered in August 2000 as the first directly observed hydrothermal vent site in the Indian Ocean. Recently, KH-10-06 cruise aboard R/V Hakuho-maru was organized for understanding the hydrothermal system and geological feature around KHF. In this study, we present the petrography of mafic and ultramafic rocks dredged from the vicinity of the KHF during KH-10-06 cruise. A total of 76 samples have been studied from 9 sites, including 24 ultramafic rocks and 38 mafic rocks and 14 other rocks. Most of them are remarkably altered and hydrated. We classified them into sub-groups based on their textures and mineral assemblies. The ultramafic rocks were classified into 5 sub-groups: 1 peridotite, 2 pyroxenites, 3 serpentized peridotites, 9 olivine-bearing serpentinites and 9 serpentinites. The mafic rocks were classified into 8 sub-groups: 21 Fe-Ti oxide gabbros, 4 gabbros including 2 mylonites, 3 olivine gabbros, 7 gabbroic rocks with various textures and 8 amphibole-rich gabbros. The other rocks consist of 5 aragonites and 9 hydrothermally altered rocks.

Keywords: mafic rock, ultramafic rock, Central Indian Ridge, Kairei Hydrothermal Field