

## **Discovery of Oceanic-crust-type Eclogite in the Bangong Co–Nujiang ophiolitic mélangé, central Tibet, and tectonic implications**

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An eclogite has been recently identified within ophiolitic mélangé in the western segment of the Bangong Co–Nujiang suture zone, at Shemalagou in the Gaize area of Central Tibet. The eclogite consists of garnet, omphacite, phengite, rutile, quartz, diopside, and amphibole. The omphacite, which has not been recognized in the suture zone until this study, occurs as rare relics within diopside grains in the eclogite. Phase equilibria modeling shows that the eclogite formed under P–T conditions of 22–28 kbar and 600–650 °C with a low geothermal gradient of ca. 8°C/km, suggesting that it formed during the subduction of oceanic crust. The protoliths of the eclogite and coexisting garnet amphibolites have geochemical characteristics similar to those of normal mid-ocean ridge basalt (N-MORB), confirming that the eclogites formed from oceanic crust. The presence of high-pressure (HP) retrograde eclogite indicates that the ophiolitic mélangé in the Bangong Co–Nujiang suture zone underwent oceanic subduction and was subsequently exhumed. We conclude that this ophiolitic belt represents a newly identified HP metamorphic belt in the Tibetan Plateau, adding to the previously recognized Songduo and Longmucuo–Shuanghu eclogite belts. This discovery will result in an improved understanding of the tectonic evolution of the Bangong Co–Nujiang suture zone and the Tibetan Plateau as a whole.