

Geochemistry of lavas collected from Hilina, Laupahoehoe, and Hiro Ridge areas near Hawaii Island

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Lava samples recovered from off-shore Hawaii island during JAMSTEC 2001 KAIREI cruise were analyzed for major and trace elements. Samples collected were from Hilina Bench, Laupahoehoe landslide, and Hilo Ridge areas. Consecutive lava sampling allowed us to look at chemical stratigraphy of the three research areas. On Hilina Bench flank, alkali basalt occurred beneath tholeiite basalt. Above of the bench, alkali basalt alone occurred as a rib, suggesting that the rib is a part of Kilauea volcano that has remained in place, while the Hilina Bench is a part of the large slump block that has slid off from Kilauea. Papa'u Seamount, also located above the bench, has tholeiitic basalts, but their chemical signatures are similar to those of Mauna Loa volcano. This seamount must be a part of Mauna Loa volcano or a sliding block from it. Similar to Hilina, chemical stratification was observed in Laupahoehoe landslide samples. This landslide block once formed a part of Kohala volcano and slid down to the present position. The Hilo Ridge samples are also stratified and chemical characteristics are similar to those of the Laupahoehoe samples. However, it is not clear whether the ridge was formed in relation to Kohala or Mauna Kea volcanoes.