

72. ON THE ABSENCE OF METASOMATIC GARNETS AT SITE 335, LEG 37, DSDP

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INTRODUCTION AND METHOD

Following the discovery of metasomatic andraditic hydrogrossular garnets in recrystallized calcite (micarb) chalk forming the basal sediments over assumed basement basalt at Site 251, on the western flank of the Southwest branch of the Indian Ocean Ridge (Kempe and Easton, 1974; Cook et al., 1974), a search has been made for similar garnets in calcareous sediments intercalated with basement basalt at Site 335, Leg 37.

Six representative samples (37-335-7-3, 29-31 cm; 8-1, 15-23 cm; 9-3, 117-124 cm; 10-1, 63-65 cm; 12-1, 36-38 cm; and 14-1, 84-86 cm, described as foram limestone, probably at one time nannofossil ooze, were treated with dilute HCl (4*N*) to remove the carbonate fraction. The residual yellow-white acid insoluble material was then examined optically and by X-ray powder photography.

RESULTS AND DISCUSSION

Optically, the material in each case consists of flakes and aggregates of volcanic glass, and siliceous spicules. X-ray powder photographs showed it to be amorphous except for the presence of a single broad diffuse band between 3.5 and 4.5Å in all but one sample (14-1, 84-86 cm). A partial analysis of one sample (12-1, 36-38 cm) gave 75% SiO₂ and 1.9% total iron (as Fe₂O₃).

Because the Site 251 garnets occur on the flank of an oceanic ridge it was thought that their presence might be related to high heat flow and therefore that they might also be present in similar sediments cored on Leg 37. As is usually the case on ridge flanks, however, heat flow is low both at Site 251 (0.7 μcal/cm²sec upwards,

as against an average for the rest of Leg 26 of 1.25: Hyndman et al., 1974) and Site 335 (average, 0.48 μcal/cm²sec: Hyndman et al., this volume). Analyses of sediment samples from Site 335 (Cronan, this volume) show that, as at Site 251 (Fleet and Kempe, 1974), they are low in iron and other metals, with little or no basal enrichment. The absence of garnets at this Site indicates that their occurrence in micarb chalk is far from widespread, either in ridge sediments or in basins. A further search, both in DSDP basal sediments and in the literature, is in progress.

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