Geochemistry and clinopyroxene mineral chemistry of basalts in the Gasht-Masuleh area, Alborz Mountains

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Abstract: Basalts in the Gasht-Masuleh area crop out in the SW Fuman, Gilan Province, and are exposed in the Jurassic and Late Cretaceous units in this area. Whole rock chemistry shows that the rock samples have Mg numbers between 30 and 31.7. Rare earth element patterns (REE) indicate light REE (LREE) enrichment and heavy REE (HREE) depletion (LaN/YbN= 7.7-9.8). Nb, Ta and Ti negative anomalies in primitive mantle normalized multi-element diagrams indicate the formation of parent melt in an arc-related tectonic setting. Clinopyroxene phenocrysts have diopside compositions, crystallized from a calc-alkaline basic parent melt in an extensional tectonic setting. These geochemical features indicate that the basalts of the Gasht-Masuleh area probably formed in an extensional related tectonic setting and inherited their arc signatures from a previous subduction event, possibly of the Paleo-Tethys Ocean crust subduction.

Keywords: Alborz Mts.; Gasht-Masuleh; basalt; clinopyroxene; extensional tectonic setting.

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