Melt compositions estimated from clinopyroxene geochemistry of primitive cumulus xenoliths from NE Japan

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Information on primitive melt compositions and their early-stage crystallization processes are obtained from the cumulus pyroxenites and olivine gabbros included in the Cenozoic volcanic rocks from NE Japan. They often contain Al-rich pargasitic amphibole, which crystallized interstitially in the pyroxeneites and olivine gabbros, and cotetic with pyroxene in pyroxene hornblendite. Crystallization of plagioclase is generally later than the pyroxene and almost contemporaneous to that of amphibole, with the exception of later crystallization in pyroxene hornblendite. These textural evidences and cotectic correlation between olivine and orthopyroxene are consistent with the formation from hydrous parental magma at about the crust-mantle boundary under continental environment. Melt compositions were estimated from the trace element chemistry of primitive to moderately primitive clinopyroxenes with high Cr_2O_3 content at least 0.3 (wt.%). Dcpx-melt was referred to Hauri (1994) and Zajace and Halter (2007). The melt compositions required show no negative Eu anomaly in chondrite normalized REE patterns. It is indicated that plagioclase has not been fractionated from the melt prior to clinopyroxene crystallization. They are similar to either of continental arc basalt or of rift basalt. Both melt types are found in Atsumi and Ogi area, the latter in Sanogaw, south Fossa magna region, and the former in Yoneyama and Umikawa, north Fossa magna region. Another HREE-depleted melt was observed for the Ichinomegata pyroxene hornblendite (Kame, et al., this meeting). The Rb-Sr and Sm-Nd mineral isochron ages obtained for them varies from Ordovician to Oligocene with commonly low initial $^{87}Sr/^{86}$ ratios, without the exception of Umikawa inclusions (Yamaguchi, et al., this meeting).