Magmatic processes beneath Mt. Cameroon – insights from minerals and melt inclusions.

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Mt. Cameroon is, with its >4000 m, the highest volcano of West-Africa and very active with 7 eruptions in the 20th century. Understanding processes governing the evolution and function of the magma plumbing system beneath the volcano is of both social and economic importance, as its flanks are populated by almost half a million people, and it is located in close vicinity to Cameroons only deep water harbour and oil refinery. Mt. Cameroon is part of the 1700 km-long Cameroon Volcanic Line (CVL), an intraplate region that has been erupting alkaline volcanics since at least 50 Ma [1]. Nevertheless, the cause for CVL magmatism is still strongly debated, with models ranging from various types of hotspots/hotlines to extension-related magmatism and to lithosphere instabilities or erosion [see e.g. 1,2,3], but without any clear consensus.

Complementary to potential underlying physical causes for magmatism studied so far, we investigate here the chemistry of the Mt. Cameroon magmas in order to assess the chemical composition of the mantle source, and to constrain ascent and storage processes modifying the magma and potentially influencing eruptive style and products. Mineral chemistry shows that olivine and pyroxene phenocrysts in both recent and older eruptions are largely xenocrystic to the magmas in which they erupted. However, they are related to the magmatic system in general, probably representing deep-seated cumulates, and thus melt inclusions in these minerals are ideal to study deep magma chamber processes. Melt inclusions in olivine display a larger variation in their chemistry than the host magmas and have a more primitive character. Together with the mineral data they provide insights to the chemistry of the most primitive melts and to the deep plumbing system.

[1] Njome & de Wit (2014), *Earth-Sci. Rev.* 139,168-194. [2] Milelli *et al.* (2012), *Earth. Plan. Sci. Let.* 335-336, 80-87. [3] Elsheikh *et al.* (2014), *J. Afr. Earth Sci.* 100, 96-108.