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## **Feeding systems at Mt Somma-Vesuvius volcano (Italy): insights from melt inclusions hosted in xenoliths**

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Mt Somma-Vesuvius (SV) is one of the most dangerous volcanoes in the world due to its location in a very densely populated area and has been the site of intense magmatic activity since 33 ka. Nowadays the volcano is in a dormant state and intense scientific research by different groups is ongoing, especially regarding the petrogenesis of its magmas. In an attempt to shed some light on the deeper magma system(s) and possible multiple differentiation stages of SV, we have analyzed some ultramafic xenoliths found in 1906 and 1944 eruptive deposits. All the sampled xenoliths show porphyroclastic textures and mineral deformations, consistent with a deep environment formation. Dunites and olivine-clinopyroxenites (1906 deposit) contain euhedral and subeuhedral olivine (ol, Fo 88-89), diopsidic clinopyroxene (cpx), and glass (gl). Melt inclusions assemblages (MIAs) are observed in ol (basalt-trachy-andesite) and cpx (phono-tephrite), while gl is found among ol and cpx with phono-tephritic compositions. Dunites and wehrlites (1944 deposits) contain euhedral and subeuhedral ol (Fo 81-86), diopsidic cpx, and gl. MIAs are observed in ol and cpx, spanning in compositions between phono-tephrite and phonolite, while interstitial glass clusters in the narrow range of phono-tephrite. Thermobarometric estimates indicate a bimodal distribution for equilibration of 1906 xenoliths: 1120°C, 10-12 kbars (25-30 km), and 1100-1180°C, 3-4 kbar (7.5-10 km). For the 1944 xenoliths, only one set of equilibration T and P is found: 1200-1160°C and 5kbars (12 km). The above mentioned results lead us to hypothesize that two different depths of storage exist for SV magmatic system: (1) a deep reservoir, located at the crust/mantle transition (about 30 km), and (2) a shallower one (10-12 km), where magma is stored and differentiated before the eruption.