INVESTIGATION OF THE MELT COMPOSITION OF A MODEL K-ENRICHED LHERZOLITE (NHD-PERIDOTITE) AT PRESSURES OF 1.0 GPa

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Recent studies in the potassic system suggest that highly potassic, silica-saturated and over-saturated magmas with minor amount of water could be direct partial melts of a potassic-harzburgite or phlogopite-lherzolite mantle at pressures up to 2.0 GPa, and temperatures around 1200? and 1300?C. In this study, we have attempted to obtain melt composition to low degree of partial melting close to the phlogopite-out boundary at 1.0 Gpa in a model metasomatized spinel-lherzolite composition under water-saturated and water-undersaturated conditions. The starting material correspond to a metassomatic peridotite created by adding 1.5% of phlogopite to a model depleted peridotitic composition. Experiments were run in solid media, piston-cylinder apparatus. Temperatures were measured with type B thermocouples and capsules of Ag75Pd25 and Ag50Pd50. Charges were exposed to several temperatures and liquid composition was measured using large area microprobe analyses of small pools of liquid in selected runs. The right composition of the melt was checked using sandwich runs with layers of liquid and peridotite. The best estimate melt composition to water-saturated and undersaturated conditions was basalt-andesite (57%SiO2, 3.4% alkalis), and trachy-andesite (58.1% SiO2, and 6.1% alkalis), respectively. Our results show that under water-undersaturated conditions, with the increase of K2O/Na2O of the peridotite, not only the alkalis increase in the liquid in equilibrium with the peridotite assemblage, but also the activity of silica. Under water saturated conditions, our data contributes to the general observation that water increases the silica content in the liquid at partial melting equilibrium of a peridotite. Acknowledge: CAPES. Contribution 057-99 of GPA.