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Thermobarometric constrain for the magma ascent during the April 5, 2003 eruption: new insight on the eruptive mechanism of the paroxistical events at Stromboli volcano

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Stromboli paroxistic event of the April 5, 2003, has occurred during the effusive activity started December 28, 2002 and ended July 21, 2003. The juvenile materials involved at this event was prevalently pumices, typical materials ejected during the major explosions. Pumiceous materials, strictly mingled with scorias, exhibit low crystallinity index and high vescicularity degree. Textures and chemical composition of the mineral phases testify processes involving changes in melt composition as well as in fluid content. Particularly, matrix glass compositions of pumices and scorias outline an evolution trend from HKCA to SHO affinity. By mean of a grid of reactions, the hydrous pumiceous-like melt results in equilibria at pressure of 0.23-0.29 GPa, whereas the degassed scorias features outline an equilibrium assemblage at lower pressure (0.1-0.04 GPa). This data define, for the paroxistic events, a model where an hydrous basaltic magma body, residing at depth below 6 Km, interact during its ascent, with a more evolved melt. This interaction occur at lower depth (at $\sim$ 0.1GPa) where the degassed scoriaceous materials reside. In the light of previously data, this model can be applied for all the paroxistic events occurred during the recent activity of Stromboli, started 3 ky ago.