**Description of Additional Supplementary Files**

**File name:** Supplementary Data 1

**Description:** Calculations of the ratio of non-bridging oxygens to tetrahedrally coordinated cations (NBO/T) from the investigated bulk rock compositions of Fani Maoré lava samples.

**File name:** Supplementary Data 2

**Description:** Qualitative Raman spectra from the studied Fani Maoré lava samples.

**File name:** Supplementary Data 3

**Description:** Crystal Size Distribution (CSD) data measured from the studied Fani Maoré lava samples.