

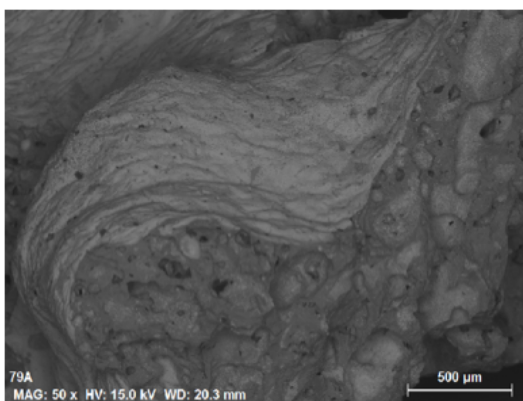
## Iron-oxide coatings in quenched lavas from Piton de la Fournaise volcano (Réunion Island)

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We report on the occurrence of Fe-oxide coatings in recent (1977-2004) air-quenched lava samples (naturally emplaced) from Piton de la Fournaise volcano. The coatings (<1  $\mu\text{m}$ ) are found in vesicles or at the surface of lavas (Fig. 1).



**Fig.1:** Backscattered Electron image of the surface of a lava bomb sample (040109-1) showing iron-oxide (light grey) coating basalt (dark grey).

The coatings were leached with 1M HCl and analyzed for trace elements and Pb isotopes. The leachates are enriched in Cu, Ni, Bi, Pb and Cd relative to lavas, with enrichment factors ( $EF_X = [X/Ce]_{\text{leachate}} / [X/Ce]_{\text{basalt}}$ ) between 2 and 12. The isotopic composition of leached Pb (0.5 - 5 ng) was measured on a MC-ICPMS Neptune Plus using a  $10^{12}\Omega$  resistor to enhance  $^{204}\text{Pb}$  signal-to-noise ratio. The Pb isotopic compositions ( $^{206}\text{Pb}/^{204}\text{Pb}$  between 17.2 and 17.6) of the leached Fe-oxides are far less radiogenic than the host lavas ( $^{206}\text{Pb}/^{204}\text{Pb}$  between 18.88 and 18.94).

It is hypothesized that the Fe-oxides share a common origin with sulfides, which are common in the plutonic roots of the volcano [1], but very rare in subaerial lavas. The measurement of the Pb isotopic composition of sulfides is planned to test this possibility.

[1] Upton *et al* (2000). *J. Volcanol. Geotherm. Res.* **104**, 297-318