SO_2 camera measurements on Stromboli

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The development of the SO_2 camera, an instrument that allows images of SO_2 amounts to be collected, has opened up new possibilities and insights into degassing behaviour at volcanoes. Here we present recent measurements collected on Stromboli volcano, which reveal patterns in the SO_2 flux emitted from the volcano. Our measurements are compared with the automatic network of scanning spectrometers on the Island which monitor SO_2 emissions. Furthermore we demonstrate a fully integrated retrieval system which takes full account of the light dilution effect, allowing much improved quantification of the measured fluxes.

Quantitative analysis with the Cameca SXFIVE FE at high lateral resolution: Applications to geochronology and mineralogy

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The development of the Schottky emitter and its implementation as electron source in Electron Microprobe has significantly improved the characterization of materials in earth sciences and in metallurgy.

The strength of an Electron Probe Microanalysis (EPMA) is the ability to accurately measure and quantify element in traces at few 10's ppm level. The Field Emission (FE) Source allows trace element analysis with high beam currents thanks to the high brightness of the source

Analysis at low beam voltage is used in order to take full advantage of the small spot sizes achievable with a Field Emission Source. Thus, the analytical resolution is not limited anymore by the beam diameter but only by the diameter of the X-ray emission volume.

This will be illustrated, in a first example, by measuring different areas in a Monazite grain. U, Pb and Th are quantitatively analyzed with high precision in order to characterize age domains.

In a second example, quantification of small refractory phases (hibonite, grossite, perovskite, …) formed by gas condensation in the solar nebula will be presented.

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