



## **Magnetic biomonitoring of lichens from a complex manmade area subjected to arsons in Rome, Italy**

Aldo Winkler (1), Maurizio Guidotti (2), Malgorzata Owczarek (2), Chiara Caricchi (1), Antonio Amoroso (2), Alessandro Di Giosa (2), Stefano Listrani (2), and Patrizia Macrì (1)

(1) Istituto Nazionale di Geofisica & Vulcanologia, Sez. Roma 2, Rome, Italy (aldo.winkler@ingv.it), (2) ARPA Lazio, Regional Environmental Protection Agency, Rome and Rieti - Italy

We report a pilot study of the magnetic properties of lichens exposed around two areas in a eastern district of Rome, Italy, where frequent fraudulent fires are set to recover metals, mostly copper, from WEEE (Waste electrical and electronic equipment).

Both native and quarterly exposed transplanted lichens have been sampled and measured, revealing intense and basically uniform magnetic properties connected to the complex anthropic context, where industrial, traffic and arson-related dusts are continuously emitted and bioaccumulated.

Moreover, chemical analyses have been conducted on the same samples, retrieving significant linear regressions between the concentration dependent magnetic parameters (susceptibility, saturation magnetization and saturation remanence) and the concentration of heavy metals, among which copper, chrome, lead and zinc.

This pilot study confirms that the magnetic properties are excellent environmental pollution proxies; further studies, mainly based on the transplanted lichens, will be addressed to the determination of the accumulation rate of the anthropogenic dusts and to the discrimination of their natural and anthropic sources in this complex area.