

## **$^{87}\text{Sr}/^{86}\text{Sr}$ signature of atmospheric PM for sources emissions monitoring**

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In environmental studies, the combination of isotopes signatures - specifically  $^{87}\text{Sr}/^{86}\text{Sr}$ ,  $^{143}\text{Nd}/^{144}\text{Nd}$ , and  $^{206}\text{Pb}/^{207}\text{Pb}$  - has been shown to be very useful in discriminating particulate matter (PM) source areas. Recent works demonstrated that radiogenic isotope ratios, used as tracers, may allow a thorough analysis of the impacts of industrial and other anthropogenic emissions on the urban environment. However these studies used bio-monitoring markers that are not inapplicable from the point of view of continuous monitoring. The objective of this study is to demonstrate the feasibility of using  $^{87}\text{Sr}/^{86}\text{Sr}$  isotope analysis on PM collected by the monitoring networks of an Authorized Agency for Air Quality Monitoring.

A specific analytical protocol for Sr isotopic measurements is developed and validated using standards. This protocol applied to *in situ* samples demonstrates that an isotopic characterization of PM is feasible under the conditions of continuous air monitoring. The data obtained are consistent with the order of magnitude of the potential sources of emissions, and the PM collected over a given period of time, combined with the environmental context, lead to a preliminary interpretation in terms of geographical origin of sources of emissions and transport paths.