

Assessment of the role of urban monumental surfaces as record of pollution: the case study of the Fontana di Camerlata (Como, Italy)

MONUMENTS are **historical surfaces**, which daily suffer the damages of pollution (*soiling, deposition and black crust formation*)



MONUMENTS can be considered as **repositories** of **anthropogenic pollution**, mainly atmospheric particulate

AIM

Assessment of the presence of **recent pollutants** on the surfaces of stone monuments

Which Pollutants? **Platinum** and **rhodium** (coming from vehicular traffic) for their catalytic role in decay reactions

Why? In order to shed new light on the effects of **anthropogenic pollution** on works of art

FIRST CASE STUDY: FONTANA DI CAMERLATA, Como, Italy



Photo: Marcello Marelli

About the monument:

- designed by Carlo Cattaneo and Mario Radice in 1934-35;
- erected for the 6th International Triennial Exhibition of Architecture and Decoration in Milano (1936);
- knocked down;
- rebuilt in 1962 in the centre of Camerlata square.

About the materials:

- metallic framework;
- concrete mortars;
- calcitic finishing layers.

Peculiarities:

- the monument is encircled by heavy traffic roads;
- the sampling was carried out ten years after the last conservation work and the authors were confident to find a detectable amount of particulate;
- the shape of the building, rich of horizontal surfaces, enhanced the deposition of particulate.

ANALYTICAL INVESTIGATIONS

Samples: particulate scraped off by the surfaces; fragments of finishing layers.

Infrared Spectroscopy (FTIR) and X-Ray Diffraction (XRD) enlightened the finishing layers composition: calcite, dolomite, quartz, silicates.

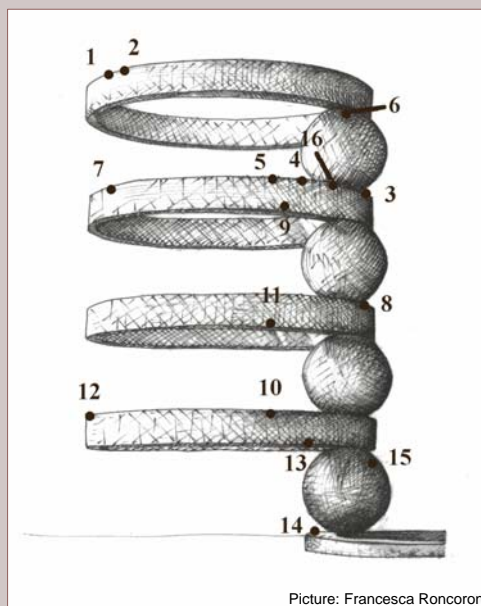
Voltammetric analyses (Adsorptive Cathodic Stripping Voltammetry, AdCSV) determined the presence of platinum in all the samples (range of concentrations: 1,20-500 µg/Kg, Limit of Detection: 0,44 µg/Kg) and rhodium in 8 samples (range of concentrations: 0,55-89 µg/Kg, Limit of Detection: 0,24 µg/Kg).

CONCLUSIONS

The surfaces of the Fontana di Camerlata are able to accumulate time resolved atmospheric deposit rich of pollutants.

The amounts of platinum and rhodium on the surfaces are not negligible and are sufficient to catalyse and enhance decay phenomena.

The results are to be taken as an important advice for future conservation decisions.



Picture: Francesca Roncoroni

Sketch of the Fontana di Camerlata showing the sampling points