

# Elemental distribution in biological and art heritage samples by using an imaging gaseous detector based system

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Combining the EDXRF technique with an X-ray imaging system based on a single photon counting detector, allows us to get images of a spatial distribution of the elements contained in an analyzed material.

The experimental system is composed by an X-ray tube, working as an external radiation source, a pinhole camera and a gas detector, filled with pure xenon, based on a Micro-Hole and Strip Plate (MHSP). The MHSP works as a photon counting detector. It is capable of storage each event retaining the interaction position (2D-sensitive detector) and energy information of the incident photons. The system allows us to detect and obtain an elemental map distribution in different types of samples ranging from art history, industry to biomedicine and biology materials. [1]

The full field of view system, with an active area of 28x28 mm<sup>2</sup> presents some important features for EDXRF imaging applications, such as: a position resolution below 125 µm, an intrinsic energy resolution of about 14% FWHM for 5.9 keV X-rays, and a counting rate capability of up to 0.5 MHz [2,3] in the present electronic readout configuration.

Results will be presented and discussed for typical samples used in biological and cultural heritage studies.

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## References

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