**The Full-Field XRF Imaging System For
Investigation Of Paintings**

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In this work we introduce a new full-field X-ray fluorescence imaging system for
non-invasive imaging of paintings. Recently the XRF imaging becomes a very powerful tool that allows elemental mapping, which offers possibility to study spatial distributions of inorganic pigments. The methodology is useful to investigate provenance of the object as well as to study the artist technique and becomes very popular in the conservation research.

In contrast to classical scanning macro-XRF imaging the full-field XRF technique allows one imaging simultaneously large irradiated area of the sample. Due to lack of the measurement head that moves very fast and very close to the investigated object this approach ensures greater safety for the investigated object. Moreover, the infinite depth of field of the pinhole camera allows one to investigate non-flat surfaces.

Our system [1] is based on 10x10 cm2 Gas Electron Multiplier (GEM) detector and is equipped with two Varian VF-50J low power air-cooled X-ray tubes. The image of the irradiated area is projected on the surface of the detector by a pinhole camera. The in-house developed prototype of the instrument enables adjusting the geometry of the measurement in order to optimize the excitation conditions for chosen projection parameters.

In this work the results of optimization of the measurement geometry of the setup are shown and compared with theoretical model of the photon irradiance distribution on the sample surface as well as on the detector surface. The design and first commissioning results of the system will be shown and the future prospects will be discussed.

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