

IDENTIFICATION OF OLD PHOTOGRAPHIC PROCESSES BY NON DESTRUCTIVE PHYSICAL METHODOLOGIES

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Abstract

The old photographic proofs show a complex structure, consisting of several inorganic and organic compounds, which results from different photographic used processes, as well as possible molecular changes along time. The knowledge of the structure of a photographic proof can allow dating it, knowing its authenticity, identify the technique or processes used and thus allowing us to establish the best conditions for their preservation or disclosure.

Visual methods and microscopic observation associated to non-destructive analytical techniques, such as X-ray fluorescence analysis (XRF), Infrared spectroscopy with Fourier transform (FTIR) and scanning electron microscopy associated to energy dispersive spectroscopy (SEM-EDS) have been used in the last decades for identification and preservation purposes.

In this work we present the results obtained by optical microscopy and XRF for 25 photographic proofs, mostly from the nineteenth century, obtained by different photographic processes and in various states of conservation.

Using these techniques allowed us to know the stratigraphic structure of photographic evidence and identify the main elements of each layer and the presence of certain elements, such as impurities and draw some conclusions and correlations between the composition and the technique.

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