

PhD Thesis: *Fotografia científica em Portugal, das origens ao séc. XX: investigação e ensino em química e instrumentação*

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**Abstract:**

This research aims to establish scientific and historical aspects of the chemical and physical processes of scientific photography in Portugal, as well as of its instrumentation, in the period of its initial development, with a focus on the scientific context of Europe.

The old photographic proofs reveal a complex structure, which is constituted by several organic and inorganic compounds that have their origin on the photographic processes applied as well as in possible temporal changes. The knowledge of the constitution of a photographic proof may allow us to date it and to discover what the best conditions for its preservation or exhibition are. It was the aim of this research to find the best methodology to identify the historical photographic processes, drawing from the association between visual and microscopical methods and non-destructive analytical techniques, that is to say: X-Ray Fluorescence Spectroscopy (XRF), Scanning Electron Microscopy coupled with X Ray Energy Dispersive Spectroscopy (SEM-EDS) Fourier Transform Infrared Spectroscopy (FTIR). A collection of representative photographic and photomechanical proofs was assembled, to which a few photographical images belonging to collections of scientific institutions were added. Combining the results that were attained by the different methods, it was possible to identify the analyzed samples.

Until now, the scientific analysis of instrumentation has not been carried in depth, and neither that of the physical and chemical processes of Scientific Photography of the nineteenth and twentieth centuries. This statement is even more factual regarding activities developed in Portugal in the different scientific fields in which photography was used. Scientific fields analyzed in this study were cartography, medicine, oceanography, meteorology, geomagnetism and spectroscopy, as well as the teaching and spreading of science. Research was carried on documentation, bibliography, iconography and scientific instrumentation existing in heritage of scientific and educational institutions. A study was performed comparing Portuguese institutions and its European counterparts, focusing on the role of photography in the development of the various sciences.

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