

## **NON-DESTRUCTIVE ELEMENTAL MEASUREMENTS AND SURFACE MORPHOLOGY OF XV CENTURY ITALIAN PAPER**

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Paper has been widely used as convenient vehicle for the acquisition, storage and dissemination of human knowledge. The art craft of making paper spread from the Far East to the Western World in the Middle Ages. For centuries, a growing number of cultural resources have been accumulating in archives, libraries and museums. The preservation of these cultural properties poses the significant challenge of limiting the deterioration of ancient paper. An advanced knowledge of the microscopical characteristics of paper and its degradation processes is indispensable in order to fulfill this objective [1].

Studies on the mechanism of paper degradation have been principally focused to the detailed investigation of the degradation of cellulose. However, real samples also contain additives, mainly sizing and fillers (such as alum and chalk), and impurities embedded in their structure, depending on the production technique employed.

In the present work, innovative approaches for quantitative measurements of paper sheets elemental content and surface morphology will be shown. We investigate ten paper sheets of the XV century belonging to the important collection of Italian ancient paper named "Corpus Chartarum Italicarum" conserved at the Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario (Rome). Due to the historical value of specimens, only non-destructive diagnostic methods have been used, a distinctive feature with respect to previous studies [2].

Results will be used within a research project on the Italian ancient paper to investigate correlations between indicators of degradation and variables that may impact the long-term stability of paper materials (content of metals/non-metals, morphology of the substrate) and historical/geographical data.

### **References**

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