

DÉSIRÉ CHARNAY - PANORAMIC VIEW OF MEXICO CITY

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Panoramic View of Mexico City
Désiré Charnay. ca. 1858.
Orozco y Berra Map Library

Length: 29.9 cm
Width: 199 cm

INTRODUCTION

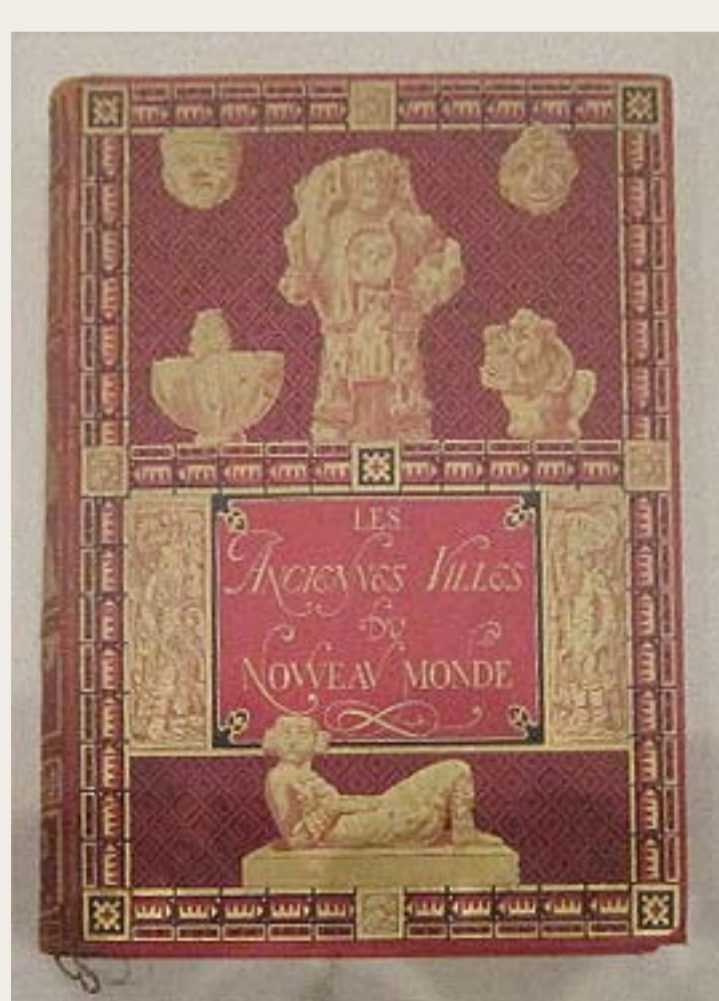
Born in 1828 in Fleurie, France, Charnay studied archaeology prior to encountering the works of **John L. Stephens and Frederick Catherwood**, especially *Incidents of Travel in Yucatán* and *Incidents of Travel in Central America, Chiapas and Yucatán*. These books revealed to Charnay the possibility of using **photography as a scientific tool** in the field to document archaeological discoveries. Inspired, he went on to study photography.

Combining his own funds with a sponsorship from the French government, Charnay undertook a **tour du monde photographique**, which would take him to sites in North America, South America, Asia, India, Middle East, and finally Europe. He arrived to the port of Veracruz in November of **1857**, and a few months later he moved to Mexico City, where he learned much about the culture and history, and met the historian **Manuel Orozco y Berra**, who probably helped him to plan his expedition to Yucatán. He also met a fellow photographer and expatriate Frenchman named Julio Michaud, who had established himself in Mexico City.

During Charnay's first stay in the city, and before his first expedition to Yucatán, he took the photographs that constitute the **Álbum Fotográfico Mexicano**, a collection of images of colonial buildings and monuments of Mexico City and Puebla. The Panoramic View of Mexico City shows visual similarities to the photographs in the Álbum which, according to some authors, were taken between **1858 and 1860**.

* CHARNAY, Désiré: *Ciudades y Ruinas Americanas: Mitla, Palenque, Izamal, Chichénitza, Uxmal*. Traducción y nota introductoria VÍCTOR JIMÉNEZ, Ed. Banco de México, 1994.

** DAVIS, Keith: *Désiré Charnay. Expeditionary photographer*. Ed. University of New Mexico, 1981.



Les Anciennes Villes du Nouveau Monde, Voyages d'explorations au Mexique et dans l'Amérique Centrale.
Librairie Hachette et Cie., Boulevard Saint-Germain 79, Paris.
1885
Ink on paper
Museo Soumaya. Mexico City.
* Image from: <http://centrefortheaestheticrevolution.blogspot.com/2011/07/incidents-of-mirror-travel-in-yucatan.html>

The Panoramic View ended up in the collection at the Map Archives of Orozco y Berra. In 2009, the National School for Conservation in Mexico City received it for analysis. **The question of the photographic process used was central to their inquiry.** Examination of the photograph revealed contradictions that made it difficult to conclusively identify the techniques Charnay used, especially in light of the fact that the years of production correspond to a **transition period between salted papers and albumenized papers**. Three years of **interdisciplinary research** and collaboration yielded answers and insights to contemporary photographic processes.

PHOTOGRAPHIC PROCESS IDENTIFICATION

STAGE 1

The researchers gave consideration to the historical and geographical **context** of the photograph, such as where the print was produced and when the **glass plate collodion negatives** were taken (**ca. 1858**). Technical and physical descriptions were also made.

One of the principal objectives in this first stage consisted of determining the presence of a protein emulsion or coating, and the image-forming substance. The team carried materials analysis using **Raman spectroscopy** and **X-Ray Fluorescence (XRF)**.

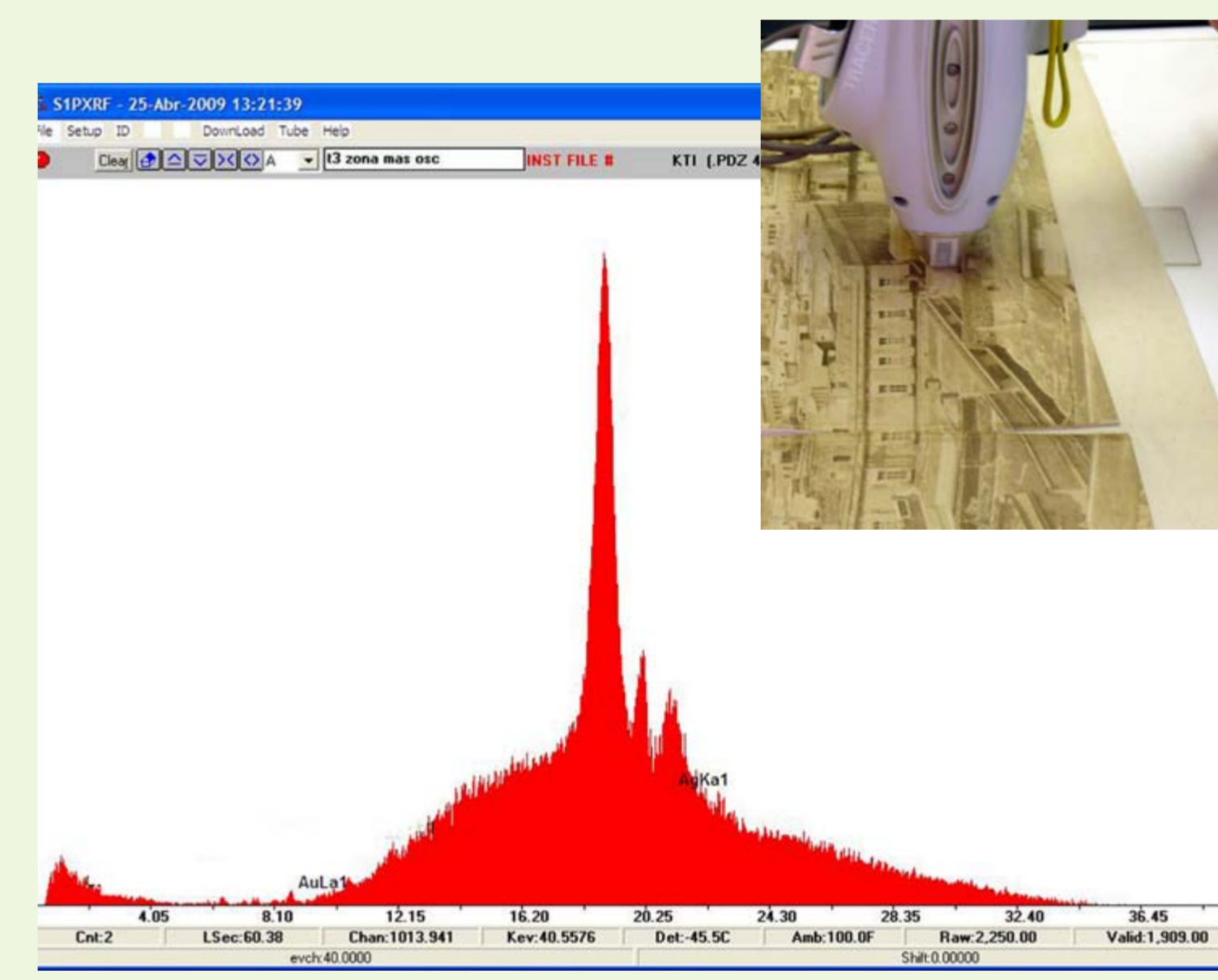
Raman spectroscopy identifies functional groups of organic molecules such as proteins by indicating the presence of amides, amines, methyl groups, etc. Unfortunately, due to the low sensitivity of the instrument used, the tests could not provide conclusive data, so further analysis was proposed.

XRF analysis, which tests for the presence of inorganic materials, provided confirmation that the image-forming substance is **silver**.

First results obtained with Raman spectroscopy



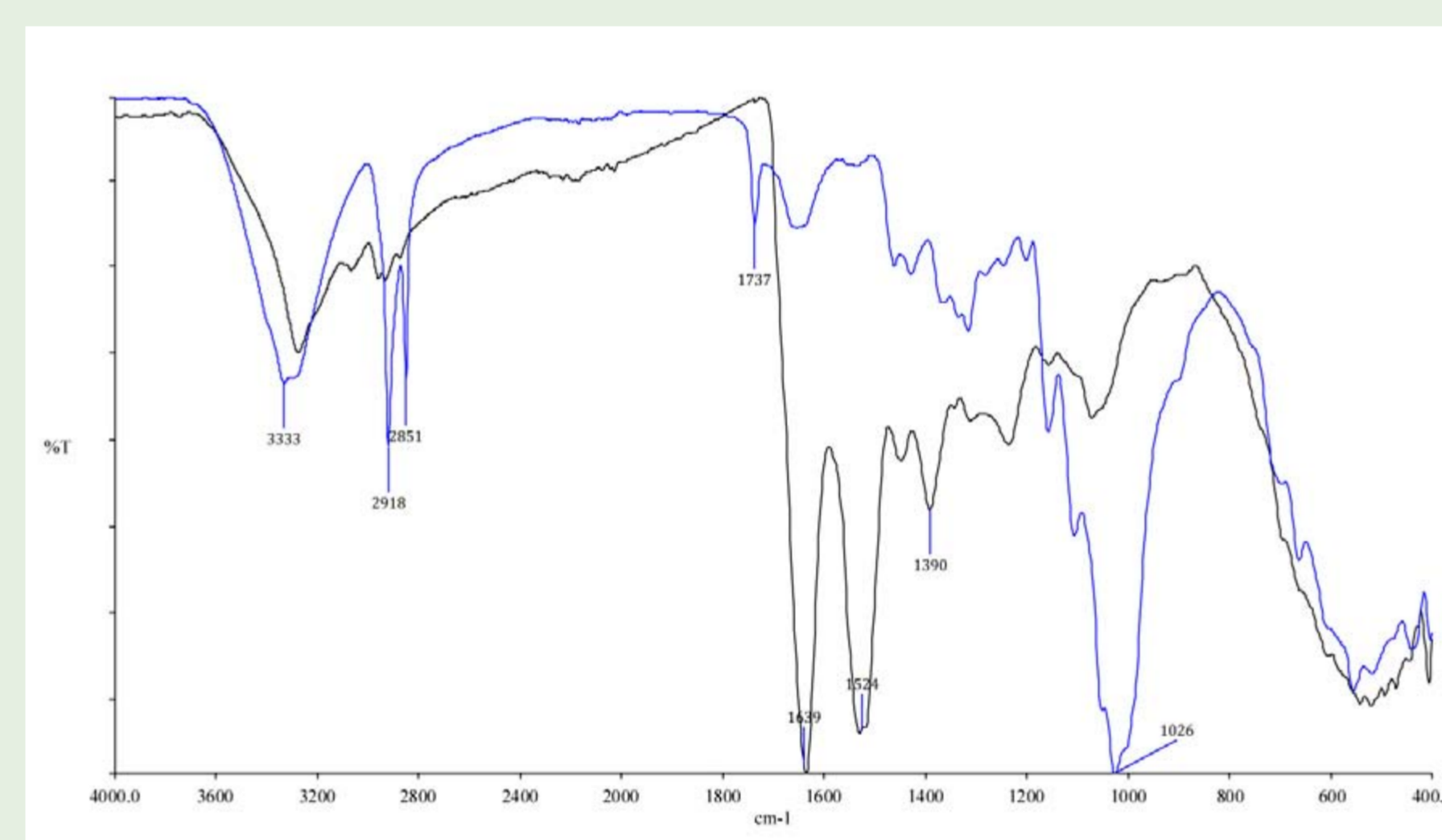
XRF results: Silver was identified as image-forming substance



STAGE 3

The researchers at the school reached out to scientists familiar with **ATR-FTIR** spectrum analysis, which proved the absence of albumen. However, it positively identified **carbonyl** functional groups (C=O) (1736 cm^{-1}), pointing to the presence of **esters** which form **waxes and oils**. The spectrums also showed absorption values at 720 cm^{-1} , eliminating the possibility of the presence of oil. Absorption values at 1462 cm^{-1} confirmed presence of wax and two other values at $1750\text{--}1730\text{ cm}^{-1}$ characterized it as **beeswax**.

All analytical results obtained by these methods conclusively establish that the photograph is a **salted paper print with a beeswax coating**. With this data, appropriate conservation treatments can be proposed and carried out.



This ATR-FTIR spectrum shows esters at 1736 cm^{-1} , absorption at 720 cm^{-1} , 1462 cm^{-1} , and between $1750\text{--}1730\text{ cm}^{-1}$, confirming the presence of beeswax.

CONCLUSION

Powerful **analytical tools** such as Raman spectroscopy and ATR-FTIR deliver accurate and useful data. **Interdisciplinary work** with specialists in other fields provides the essential link necessary not only to synthesize the raw data, but complement it with historical context and to establish that the photograph is a **salted paper print with a beeswax coating**.

By complimenting analytical techniques with visual and microscopic examination, the material state and rate of deterioration of photographs may be determined. Combining methods, tools and knowledge leads to better recommendations for treatment, mounting and storage of historic photographs such as this one.

ABSTRACT

Désiré Charnay, a well-known travel photographer and archaeologist, left a legacy of photographic documentation of various Mexican cities and archaeological sites taken during his first trip to Mexico between 1857 and 1861.

Many of his photographs are representative of historic photographic techniques, such as salted paper and albumen prints. One of his most beautiful and impressive works depicts a panorama of downtown Mexico City, circa 1858, composed of five images contact printed from glass plate collodion negatives. The Musée du quai Branly, in Paris, currently house the negatives. Charnay gave the photograph to one of his closest friends in Mexico, Manuel Orozco y Berra.

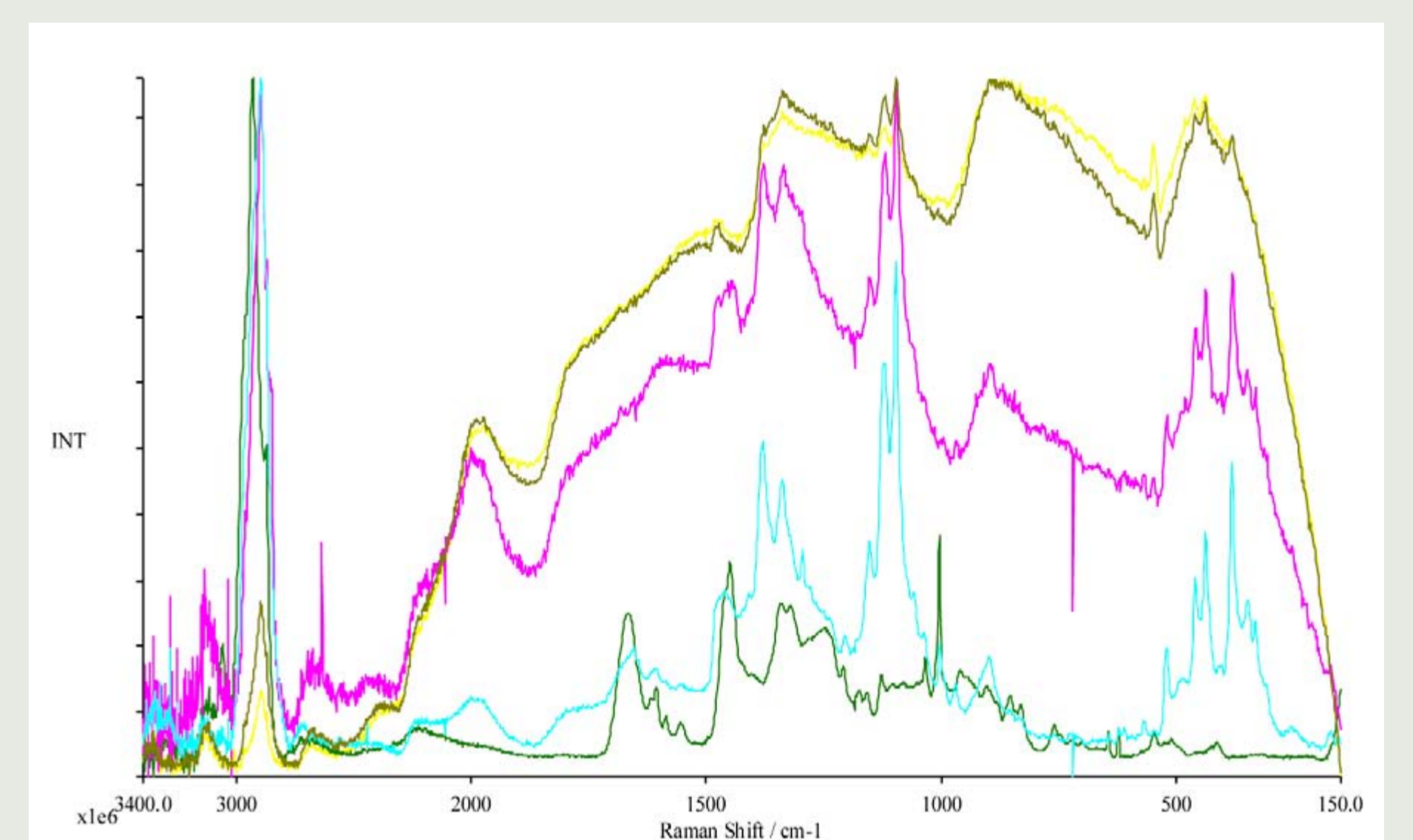
In 2009, students of the Post-graduate Course in Conservation of Photographs at the National School for Conservation in Mexico City began studying this photograph. Over the course of three years of extensive research, teachers and students collaborated with scientists, historians, photographers, curators, and conservators from local and foreign institutions in order to identify the photographic technique and to propose and execute a suitable course of treatment for this masterpiece.

STAGE 2

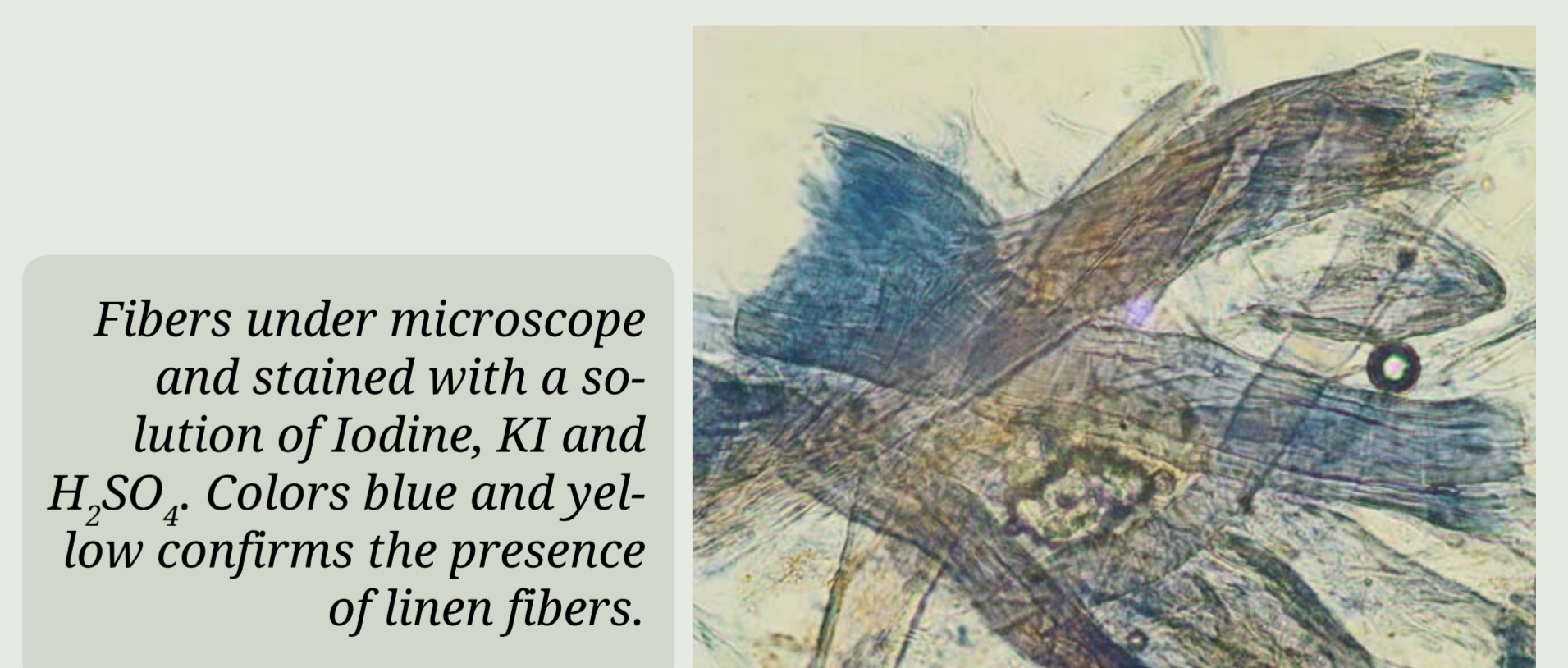
At this point the researchers set about gathering better data by repeating the Raman spectroscopy testing with more accurate software and hardware (Raman Station 400F Perkin Elmer). Only **amide group** ($\pm 1650\text{ cm}^{-1}$ and $\pm 1550\text{ cm}^{-1}$) was identified.

In order to **complement** this information, scientists and conservators suggested further analysis with **ATR-FTIR**. Preliminary results indicated **absence of proteins** due to the **absence of amine group** that characterize albumen.

Fiber analysis determined that the **primary paper support was linen**, and the secondary support was cotton, using a mix of starch and glue as adhesive. (Photo fibers ID and mounting).



Raman spectroscopy: Amide groups were identified between $\pm 1650\text{ cm}^{-1}$ and $\pm 1550\text{ cm}^{-1}$



Fibers under microscope and stained with a solution of iodine, KI and H_2SO_4 . Colors blue and yellow confirms the presence of linen fibers.

ACKNOWLEDGEMENTS

- Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete. (ENCryM - INAH)
- Especialidad en Conservación y Restauración de Fotografías (ECRF - ENCryM).
- Mtra. Fernanda Valverde Valdés, ECRF - ENCryM.
- Lic. Carlos Vidali Rebollo, MOyB
- Q. Javier Vázquez, ENCryM
- T.Q.I. Luz Esperanza López
- Mtra. Gabriela Cruz Chagoyán, ENCryM
- Biol. Irais Velasco Figueroa, ENCryM
- Q. Ernestina Cervera, UNAM
- Q. Marisela Gutiérrez Franco, UNAM
- M. En B. Yuri Castro Riquel, PERKIN ELMER DE MÉXICO S. A.
- Bernabé Rico, Perkin Elmer de México, S.A.
- Classes: 2008 - 09, 2009 - 10, 2010 - 11.