

## Understanding 20th Century Photograph: the Baryta Layer Symposium

Paul Messier<sup>1</sup>, Dusan Stulik<sup>2</sup>

This one day symposium took place at the Getty Conservation Institute (GCI) on January 24, 2006. The symposium was attended by 75 conservators, conservation scientists, dealers, appraisers and curators. The focus of the meeting was the ongoing collaboration between Paul Messier and the GCI to characterize certain features of 20th century photographic paper. Giacomo Chiari (Chief Scientist, GCI) provided an introduction to GCI's research agenda and its commitment to additional research into studies to characterize photographic materials. Paul Messier's (Conservator in private practice, Boston) followed by discussing the development of his reference collection of historic photographic papers. Papers from this collection, all identified by manufacturer, brand, date and finish were used as the basis for much of the work highlighted during the rest of the symposium. Dusan Stulik (Senior Scientist, GCI) next presented the results of an extensive examination using x-ray fluorescence spectroscopy (XRF) of the historic paper samples. Among the common elements that can be detected are barium and strontium (from the baryta layer), calcium (paper base) and often chromium (present as a gelatin-hardening agent). Measurement of these elements, especially when compared to a baseline of papers of known provenance, can provide clues into the origins of prints, possibly identifying the manufacturer, brand and date. David Miller (Professor of Chemistry, California State University, Northridge) reviewed his work using inductively coupled plasma-mass spectrometry (ICP-MS) and neutron activation analysis (NAA) for elemental analysis of photographic papers. These techniques were used to confirm and extend the quantitative XRF analysis as well as to search for additional trace elements that could be useful in provenance studies. Art Kaplan (Scientist, GCI) focused on the distribution of key elements, as well as trace elements such as aluminum, silicon, potassium, manganese, iron, copper potassium and chromium, within the multiple layers of a gelatin silver photograph. Cross sections of photographic paper were used to render elemental "maps" showing the location and relative concentrations of these and other elements were prepared using electron microprobe analyzer (EMPA) as well as a combination of dispersive X-ray analyzer (EDX) and ICP-MS. Renaud Duverne (GCI Graduate Intern) presented research into the measurement of other physical parameters of gelatin silver paper, including particle size of baryta, overall paper thickness, emulsion thickness, emulsion super coat thickness, baryta thickness and overall paper density. All of these variables, especially when combined with the techniques for elemental analysis, can be extremely useful when characterizing a large reference collection of photographic papers. A practical demonstration of the quantitative XRF technique was provided by Dusan Stulik and Tram Vo (Conservator in Private Practice, Los Angeles) to identify the manufacturer and brand of a print of unknown origin by comparing it to a small reference set of characterized papers. The symposium was concluded with a round table discussion. Dominant themes of the round table were the need for additional forums where conservators, curators and dealers can meet to exchange information; the need for additional collaborative projects to characterize other features, such as paper fiber analysis an surface texture; and the fact that these emergent tools will only serve to compliment, but not replace, existing modes of connoisseurship.

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<sup>1</sup> Conservator of Photographs, Paul Messier LLC, Boston, MA 02135, USA, 617 782 7110, pm@paulmessier.com

<sup>2</sup> Senior Scientist, Getty Conservation Institute, Los Angeles