Analysis of Three Gel Poultices in Paper Conservation

ABSTRACT

Agarose, Carbopol, and Laponite gels were evaluated as alternatives to cellulose ether poultices for the local removal of moisture-sensitive adhesives on paper artifacts. These gels have noticeably different working properties than cellulose ethers and are useful in a variety of paper conservation applications. The color stability of these materials was analyzed in dry powder form and as gel residues on paper. Analysis was performed by UV-visible spectroscopy, combined with visual examination under normal illumination and long-wave ultraviolet radiation. Since earlier studies demonstrated that both Carbopol and Laponite contribute to the discoloration of paper after artificial aging, this study tested the effectiveness of a barrier tissue to block the deposition of residues on paper. Paper samples treated with Laponite were analyzed with a scanning electron microscope coupled with energy dispersive x-ray fluorescence spectroscopy (SEM-EDS) to identify residues. Visual and ultraviolet examination techniques demonstrated that Carbopol (pH adjusted with sodium hydroxide) and Laponite caused discoloration on paper when applied directly, and that a barrier tissue was effective at blocking the deposition of residues. Agarose did not show adverse effects.

SUBSEQUENT PUBLICATION


JEFFREY WARD
Associate Conservator, Paper
Solomon R. Guggenheim Museum
New York, New York
jwarda@guggenheim.org

IRENE BRÜCKLE, PhD
Head of Conservation
Kupferstichkabinett
Staatliche Museen zu Berlin
Berlin, Germany
i.bruckle@smb.spk-berlin.de

ANIKÓ BEZÚR, PhD
Andrew W. Mellon Research Scientist for the Museum of Fine Arts, Houston, and the Menil Collection
The Museum of Fine Arts, Houston
Houston, Texas
abezur@mfaht.org

DAN KUSHEL
Distinguished Teaching Professor, Technical Examination and Documentation
Art Conservation Department
Buffalo State College
Buffalo, New York
kushelda@buffalostate.edu

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