

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

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