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SYNCHROTRON INFRARED MICROSPECTROSCOPIC STUDIES OF THE CHEMISTRY OF INK ON PAPER[1] T.J. WILKINSON, D.L. PERRY, MICHAEL C. MARTIN, WAYNE R. MCKINNEY, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, A.A. CANTU, U.S. Secret Service, U. S. Department of the Treasury, Washington, DC 20373 Synchrotron infrared microspectroscopy has been used to study the chemistry of ink-paper material interactions in the mid-infrared region (4000-400 cm^{-1}) as a function of both ink and paper type and artificial aging of the ink-paper sets as occurs in handwriting. Band intensities and band intensity ratios for functional groups of chemical molecules that are inherent to the experimental system are discussed in the context of molecular components as they are perturbed by interactions between the ink and paper surfaces. Mapping using spectral markers for the ink-paper interactions at the ink-paper interfaces is presented and discussed. Changes in the chemistry of the ink will be discussed in context of the aging process which is reflected in the changes of the infrared spectra.

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