

Nondestructive forensic analysis of antique stamps by use of synchrotron radiation infrared spectromicroscopy.

T. J. Wilkinson, D. L. Perry, M. C. Martin and W. R. McKinney, Lawrence Berkeley National Laboratory, Berkeley, CA 94720.

Synchrotron-based Fourier transform infrared spectromicroscopy (FTIR SM) has been used to study and characterize Canadian 3-cent Victorian era “Small Queen” stamps. This series of stamps was printed and issued over 25 years by a single source, but were printed at different locations, and using imprecise ink composition mixtures, resulting in very subtle differences among them that are often difficult to discern. Many current analytical methods are destructive, and non-analytical methods are subjective, more art than science, and may affect the rarity and price of the stamps. The paper and paper/ink chemistry is exceedingly complex, varying from microdomain to microdomain. Changes in the paper and ink are identified and discussed.

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