

**Abstract:** A new approach to identifying artifacts sensitive to visible light exposure, based on the direct measurement of the lightfastness of materials that compose the object, is described. An instrument has been constructed that is capable of identifying fugitive materials (more light sensitive than Blue Wool #2) rapidly and essentially nondestructively. Accelerated light-fading tests on tiny (0.4 mm diameter) areas of an object are done while simultaneously monitoring the color change produced in the test area. The lightfastness determined in such microfading tests has been found to compare well with that measured in more conventional accelerated light-aging tests. The risks of damage to the artifacts from these microfading tests have been examined. By terminating the fading test when a small but definite color change has been produced, the risk of disfiguring the object by creating a visible bleached spot is judged to be very small. Exposure to the light intensities used in the microfading tester can heat test areas to as high as 50°C, so that low-melting materials such as waxes should be considered at risk of some degree of melting damage. For most art materials that are more heat tolerant, however, this technique holds great promise as a tool for recognizing very light-sensitive materials and for predicting the consequences of exhibition under particular lighting or atmospheric conditions.