Dirk Andreas Lichtblau

SurveNIR – a Non-destructive Evaluation of Material Conditions in Conservation, Actual and Potential Use

Abstract

SurveNIR, an entirely non-destructive characterization tool and surveying methodology was developed on the base of near infrared spectroscopy. By building a large database of historic samples and by their detailed characterization, an incredible resource was built. This database was used for chemometrical calibration of a purpose-built NIR spectrometer to characterize the degradation state of paper.[1] As it is the most common carrier of information, the degradation state of paper is crucial for the preservation and conservation of cultural heritage in archives, libraries and museums. SurveNIR was developed to evaluate the condition of historical and modern paper but it will be useful for a wide range of other materials too. It is based on objective and scientific measurements, no sample preparation is needed and the measurements are so fast, that it is feasible to evaluate even very large collections. SurveNIR is using the individuality of each paper, which is mirrored by its Near-Infrared-Spectra (NIR). No damages after folding, no water stains from surface-electrodes or coloured markings of pH indicator-pens will remain on unique objects.

Measurements with SurveNIR are non-invasive and non-destructive.

Top date, SurveNIR can evaluate representative chemical-physical parameters from paper, such as pH or tensile strength. Besides the evaluation of the degradation of paper, SurveNIR can also identify the type of up to 30 different plastics. Since SurveNIR combines all expectations of a modern tool in conservation, its use will be extended in the future to additional applications and materials.

---

1   Trafela et al. (2007); Lichtblau et al. (2008); Strlič et al. (2008)