

Spectral Database Application for Color Compensation Process in Painting

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Color compensation is an important step in painting conservation process that actual pigments are re-applied on the original art works. The process of color compensation is a challenging task since most media used in East Asian paintings are water-soluble and are not protected by any surface coating. To maintain the originality of the art works, it is desirable to make the color compensation work identifiable and reversible. Consequently, the area of the newly compensated colors should be easily identified, yet still visually agreed with the original colors. There are new synthetic pigments that showing similar colors as the traditional mineral pigments in the visible band (380-730 nm), however exhibiting totally different spectral reflectance characteristics in the infrared region than the natural mineral pigments. It is then possible to maintain the color similarity visually and to establish the identifiable difference for reversible purpose if necessary in the color compensation process. To accomplish this unique task, a spectral database is proposed to record the spectral characteristics of the synthetic and natural pigments both in visible and near-infrared bands. Through the indexing in the CIELAB color space, a color match can be searched for the natural mineral pigment to the corresponding synthetic pigment in the visible band. Furthermore, the difference among spectral characteristics can also be assured and observed through the spectral data in the infrared region in the database. With such information in the database, it is much easier to achieve the identifiability and reversibility in color compensation for East Asian paints.

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