

Advantages of Visible Light Detection

in Flash Chromatography

Abstract

Most flash systems are constrained to using a subset of ultraviolet (UV) light range (typically from 200 to 360 nm). A detector with an extended wavelength detection range enables automatic peak collection on a wider variety of compounds. In the following description, visible light is used to purify a hair dye product.

Discussion

Compound Absorbance

Many compounds, including various hair dyes, show little or no absorbance in the UV range of 200-400 nm. Other compounds, such as chlorophyll, porphyrins, and carotenoids, have the strongest absorbance in the visible light range of 400-800 nm. Many dyes and pigments used for clothing, paints, food, and hair coloring will benefit from the use of a visible light detector. The UV-Vis variable wavelength detector for CombiFlash® systems, with a detection range of 200-800 nm, can detect these compounds.

Detection Without Solvent Absorbance

Other compounds may show their greatest absorbance in the UV range, but the absorbance of the purifying solvent may overlap the compound spectrum. An extended wavelength detector allows the detection of the compound peak at another wavelength.

Purification of a Hair Dye Product

In the chromatogram shown in Figure 1, an end user's proprietary hair dye was loaded onto a CombiFlash equipped with a UV-Vis and using a RediSep 13g C18 column. During the purification, the wavelength was changed to allow detection of the compounds at their most sensitive wavelength.

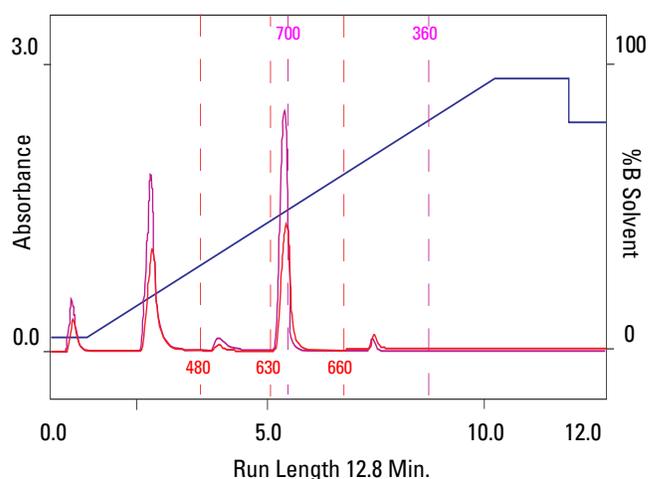


Figure 1: Purification of a hair dye product on a CombiFlash using a RediSep C18 column Detection and monitor wavelengths indicated by dashed lines

Conclusion

Visible detection is an easy option to expand the utility of the CombiFlash system. The use of a visible light detector allows detection of compounds at their most sensitive wavelength and eliminates the need to collect the entire eluant of a column. With the visible detection option, a CombiFlash fits the needs of users purifying pigments, dyes, and natural products.

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