

PWDAS-21

DERIVATION AND APPLICATION OF METAMERIC SAMPLES IN COLORIMETRY

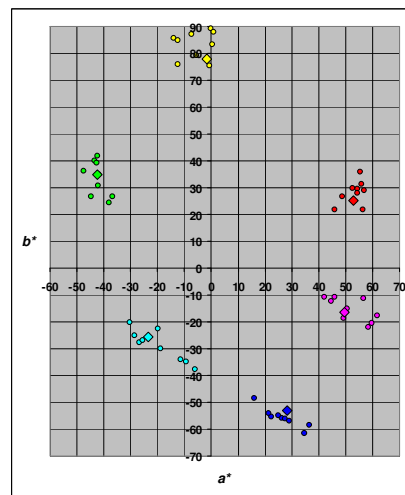
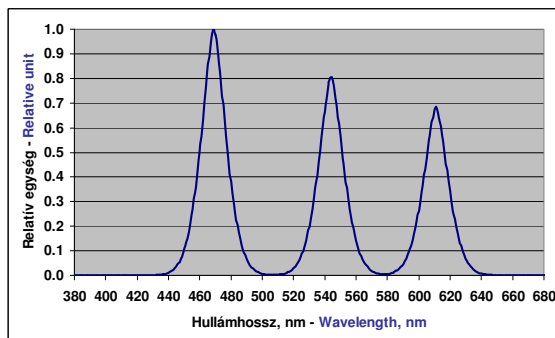
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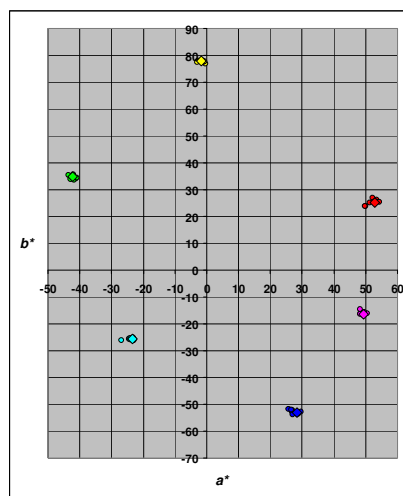
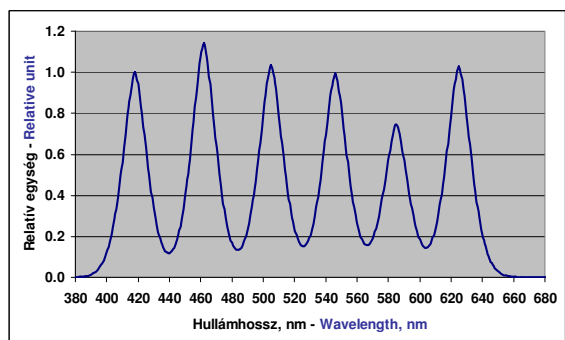
One kind of metamerism in colorimetry is defined as the phenomenon when color samples with different spectral reflectance functions have the same tristimulus values under a certain illuminant. When changing the illuminant the tristimulus values of such metameric samples are no longer the same. Metameric samples are a useful tool for special colorimetric purposes. However, producing theoretical metameric samples, i.e. spectral reflectance functions, is not an easy task.

In the paper an idea is introduced by which natural-like metameric samples can be derived. As the first application example it will be demonstrated how metameric samples can help when determining the central wavelength values of LED types when designing new light sources in order to replace traditional ones. It comes out that 6 LED types chosen appropriately can represent a good daylight simulator in the visible spectral range.

As the second example it will be shown how those metameric samples had been derived that are to be discussed by the appropriate CIE Technical Committee in order to define a quality assessment method for Indoor Daylight – similarly to publication CIE 51.2.



Optimal central wavelengths for 3 LEDs, and behavior of metameric samples derived for 6 samples of the ColorChecker® Chart.



Optimal central wavelengths for 6 LEDs, and behavior of metamer samples derived for 6 samples of the ColorChecker® Chart.