

Shades of opinion

Looking at the latest online papers from Lighting Research and Technology, Iain Carlile singles out studies on colour preference

Lin et al postulate that colour preference varies with the lighting application. They undertook a psychophysical experiment using three different LED sources in three different applications: restaurant, retail display and a supermarket. From the comparisons made by observers, they found that colour preference for the three different LED sources was not the same in each application, and that none of the existing single value measures was able to predict the preferred source for each application. They note, however, that for the application of standards and guidance a single measure is still necessary. They therefore suggest the use of a colour distortion icon to describe hue and saturation changes.

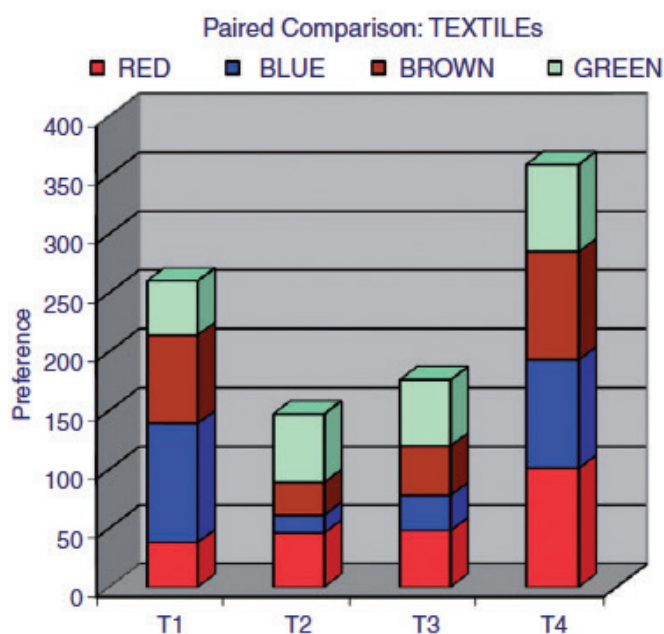
Szabó et al look at preferred colour rendering for shops. They investigate the optimal LED spectral power distribution (SPD) for the lighting of different colour textiles, fruits and vegetables, meat and bakery products. The spectra of the LED light sources were tailored towards different colour quality metrics, such as the colour rendering index (CRI) and the colour quality scale (CQS), and small and large-scale experiments conducted to identify which metric best correlates to the observer's preference. Based on their results they recommend optimal SPDs for retail environments.

Smet and Hanselaer investigate the application of memory and preferred colours to colour rendition metrics (which assume that colour rendition and quality improve when the colour of familiar objects is rendered more closely to what is expected or preferred). Four different visual appreciation and naturalness perception metrics were compared with psychophysical data. The authors concluded from their studies that naturalness requires higher object saturation levels than those provided by the CIE reference illuminants in fidelity-type metrics, but not as high as for visual appreciation.

Considering both art preservation and presentation in the lighting of paintings, Pridmore investigates the balance between cool-warm (bluish-yellow) lighting. He presents radiometric

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and colorimetric methods of predicting cool-warm balanced illuminants. While the traditional recommendation for lighting paintings is a CCT of 4000K or less, the author's conclusions recommend 4500K-5500K at 95-100 CRI. The reasoning behind this is that other illuminants (daylight or Planckian) have more power in their short or long wavelengths resulting in bluish or yellowish illuminants affecting the clarity of how the painting is viewed.



Preferred colour rendering for shops: paired comparison results for textiles (Szabó et al)

The recommendations are made primarily for the balance between cool-warm appearance, colour diversity, clarity and contrast. While the author's recommendations do not agree with all previous studies, they are closely supported by a number of other recent 'preferred illuminant' studies, adding to the debate as to the best way to light artworks.

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Lighting Research and Technology: OnlineFirst

In advance of being published in the print version of Lighting Research and Technology (LR&T), all papers accepted for publishing are available online. SLL members can gain access to these papers via the SLL website

- Colour preference varies with lighting application *Y Lin, M Wei, KAG Smet, A Tsukitani, P Bodrogi and TQ Khanh*
- A study of preferred colour rendering of light sources: shop lighting *F Szabó, R Kéri, J Schanda, P Csuti, A Wilm and E Baur*
- Memory and preferred colours and the colour rendition of white light sources *KAG Smet and P Hanselaar*
- Preferred illumination for paintings: Cool-warm balanced colour temperature predicted from radiometry and colorimetry *RW Pridmore*