

PEKA Light Engine: Spectrally Invariant and Efficient Illumination for Transmitted Light Microscopy

The [PEKA Light Engine](#) provides a powerful alternative to conventional tungsten-halogen sources for transmitted light microscopy and other applications. Unlike tungsten-halogen lamps (Figure 1), the spectral distribution, represented by the correlated color temperature (CCT) of the PEKA's white light output does not change when the intensity is turned up or down (Figure 2). This results in consistent image color rendition, independent of intensity setting. In contrast, the familiar purple-pink coloration of hematoxylin-eosin histology sections appears brown-yellow viewed with low intensity tungsten-halogen lamp illumination. As shown in Figure 1, only 15-20% of the spectral output of tungsten-halogen lamps falls in the visible range. The PEKA Light Engine generates only visible light (Figure 2), and is therefore much more efficient, consuming only 10 W of electrical power at 100% intensity compared to 30–100 W for a typical tungsten-halogen lamp.

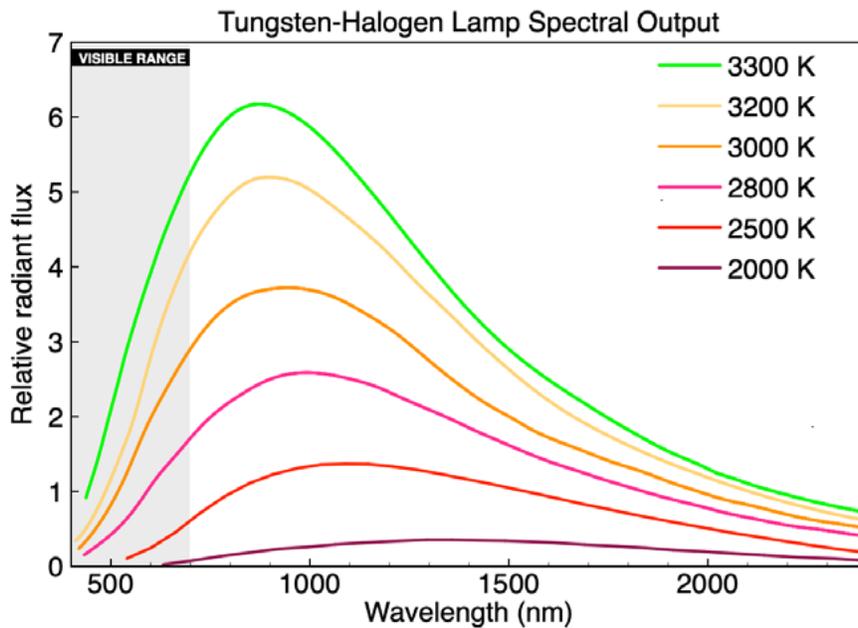


Figure 1. Variation of Tungsten-Halogen lamp spectral output as a function of output intensity.

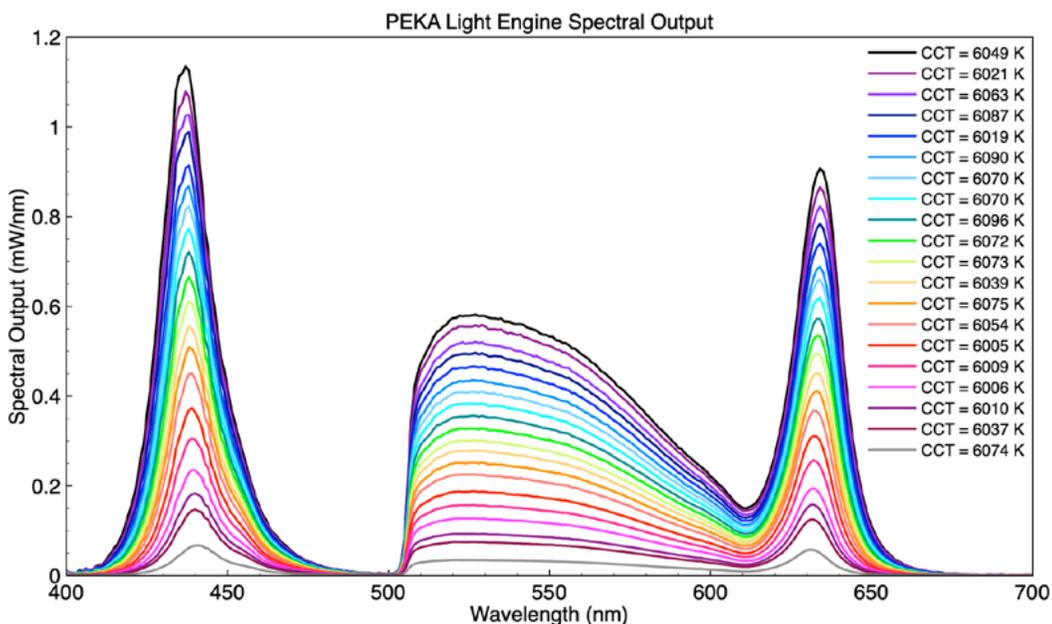


Figure 2. Spectral output of a PEKA Light Engine at 20 different intensity levels set using Nikon Elements control software. The mean CCT is 6051 K with 0.5% coefficient of variation (CV).