

A Design of LED Dental Operation Light

D.I. Shaw and S.P. Cuo

Summary

LED has been used in optical system extensively, because of the power saving efficiently and excellent characters. Medical instrument is one of the important fields of LED application. For example, surgical light, dental operation light, etc have been developed in past few years. In this study, based on the specification ISO 9680: 1996 "Specification for Dental Operation Light", a compact LED dental operation light of linear layout is developed. The designed dental operation light consists of spheroid reflectors, collimating lenses, lens hoods, auxiliary reflectors and supporter accessories. The luminance of the light is over 35,000 lx (Max.), the projective pattern has dimension of width 60 mm and length 120 mm (projected on a screen in front light 700mm), no chromatic aberration in the 50 % counter line of luminance, color temperature is 5500 K. and conduct the concept of compensating glaring light to eliminate the shadow effect by auxiliary reflectors. Method of light tracing is used to simulate the light path to find the light projection pattern. In addition to simulation, the experimental results and performances evaluation are also done to prove the correctness of the simulation results.

