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Filament Applications Note

Filament Technology

Helioworks has developed state-of-the-art incandescent IR sources utilizing tungsten filaments for high temperature, stable, and long life operation. Pulsable versions feature large temperature modulation at elevated frequency. They have broad capability in the design of steady state and pulsable sources utilizing both tungsten and Kanthal filaments.

Tungsten filaments are used in most common incandescent light bulbs but these have glass envelopes that do not transmit infrared in quantity. Tungsten achieves the highest temperature and power of any practical material and is therefore a valuable source of infrared emission at longer wavelengths. However, to make a source of intense infrared emission using tungsten, one must use another protective window and they have chosen sapphire because of its high transmission in the near infrared. They have integrated a sapphire window with the tungsten filament for Mid IR applications up to 5.5 μ m. For higher IR applications CaF₂ and ZnSe are window options.