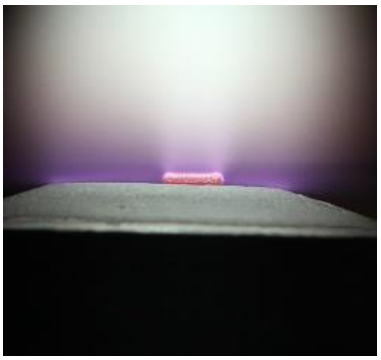
Diamond PCVD

Application Overview

Diamonds are artificially grown from a small crystal seed in a vacuum furnace using a CH4 and H2 plasma chemical vapor deposition (PCVD) process. Under these conditions ions from the gases dissociate and create a carbon and hydrogen plasma that surrounds the diamond in the target measurement area.

Williamson Wavelength Advantage

Infrared pyrometers are used to ensure repeatability and efficiency during the PCVD process. The challenge is that the plasma emits strong bands of infrared energy at very specific wavelengths, and it is therefore critical for the pyrometer to use narrowband wavelengths to avoid interference from these emissions. These narrow wavebands of measurement are required to assure a consistent temperature reading that is a measurement of the target diamond and not of the plasma.



The Williamson models DW-24 and SP-CH are the only dual-wavelength and specialty wavelength pyrometers, respectively, able to view through this plasma to provide a consistent temperature reading during the Diamond CVD process. The model SP-CH is recommended for high density plasma clouds.

Pyrometer Benefits

- Consistent temperature reading assures desired properties
- Optimize processing speed
- Available in Traditional & Fiber-Optic

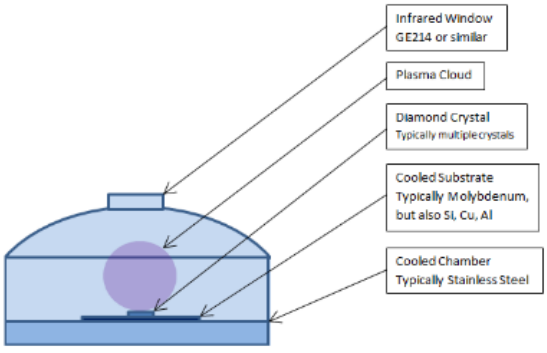
Wavelength Technology

- DW-24 technology views through CH4 plasma
- SP-CH technology views through high density CH4 plasma

Suggested Models

Traditional Configuration
Pro DW-24-46, 1100-4000°F / 600-2200°C
Fiber-Optic Configuration
Pro DWF-24-47, 1200-4500°F / 650-2500°C

High Density Plasma Cloud
Traditional Configuration
Pro SP-CH-25, 850-2500°F / 450-1350°C
Fiber-Optic Configuration
Pro SPF-CH-25, 850-2500°F / 450-1350°C



Traditional

Fiber-Optic