Specs for Acquisition Posting NNG1559546Q

NASA/GSFC has a requirement for two diamond vacuum windows and a substrate window with the following capabilities:

1) Our experiment requires the vacuum windows and substrate to be composed of CVD diamond material. This is critically necessary in order to transmit radiation across the visible, infrared, and terahertz spectral regions without breaking the purge.

2) The diamond windows must be embedded in UHV conflate vacuum flanges using hermetic diamond-metal joints (optimized for low thermo-mechanical stress and a wide range of operation temperatures).

3) CVD diamond windows, optical quality - flat faces polished, surface roughness <20 nm RMS, - side faces laser cut, - diameter 38 mm, clear aperture 33 mm, - central thickness: 900±100 µm - wedge: 0.5°±0.1° - flatness of the unmounted windows: < 3 fringes over the free aperture area

4) Flange Mountings: window braze-sealed into Conflat UHV flange, - flange size: standard 2.75 inch Conflat (CF 40)

5) UHV window specifications and certificates: window bakeable at 250 °C - window operatible at 230°C - window tested to 1 bar differential pressure - leak rate < 1 x 10-10 bar.cm3/sec He

6) Optical grade CVD diamond window: optical grade polycrystalline CVD diamond, polished, Ra < 20nm, Wedge : <0.05°, Central thickness : 1000 µm (-100/+100 µm) , Planarity : better lambda/2 at 633nm until 1mm from the edge Diameter : 25.4mm (0.1mm)

Deliverables

Two UHV diamond windows mounted in CF40 vacuum flange and an optical grad CVD diamond window, polished.