

**METHOD FOR GROWING WHITE COLOR DIAMONDS BY USING DIBORANE
AND NITROGEN IN COMBINATION IN A MICROWAVE PLASMA CHEMICAL
VAPOR DEPOSITION SYSTEM**

ABSTRACT

The present application discloses the details of a microwave plasma chemical vapor deposition process that uses Nitrogen and Diborane simultaneously in combination along with the Methane and Hydrogen gases to grow white color diamonds. The invention embodies using nitrogen to avoid inclusions and impurities in the CVD diamond samples and Diborane for the color enhancement during the growth of diamond. It is also found that heating of the so grown diamonds to 2000 C results in significant color enhancement due to the compensation of Nitrogen and Boron centers in the samples. The origin of the various colors in diamond is explained on the basis of the band diagram of CVD diamond.

Figure 1.