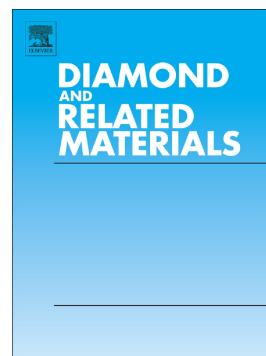


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Tin-vacancy color centers in micro- and polycrystalline diamonds synthesized at high pressures

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Abstract

Here we report *in situ* formation of tin-vacancy color centers in microcrystalline and aggregated diamonds synthesized in Sn-C growth system at pressure of 8-9 GPa and temperatures of 1700-2000 K. Bright zero phonon line at 620 nm and a broad line at 660 nm in its sideband were only features in luminescence of the center in single microcrystals at room temperature. Diluting the growth system by lighter chemical elements, such as hydrogen and oxygen, with higher chemical affinity to carbon was shown to prevent doping of diamond with Sn. Synthesis of diamond crystals with SnV center in double Sn-C growth system under pressure is very important for understanding the nature of this new color center as well as perspectives of its practical usage.

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