The 392th Geodynamics Seminar

Synthesis of nitrogen-doped nano-polycrystalline diamond

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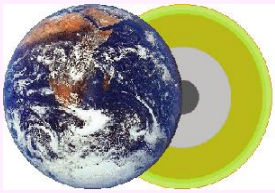

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Abstract

Doping during growth is the most effective way to functionalize the diamond. For doping the diamond, between the two principal approaches of diamond synthesis, the high pressure catalytic method has limitation, such as the uncontrollable crystal growth and the unavoidable deterioration of crystal quality both caused by the addition of dopant into the reaction system, while the chemical vapor deposition (CVD) method is preferred, with which pronounced progress on the optimization of diamond properties has been realized step by step, and now there are successful examples of the application of doped diamonds prepared by the CVD method.

It is no doubt that the nano-polycrystalline diamond (NPD) formed by the direct conversion of graphite under high pressure and high temperature brings new knowledges to diamond researches and new possibilities for application. Similarly, doping should be considered in the synthesis of NPD to optimize or modify the properties of NPD. Some features of NPD, such as high purity and suppressed growth, may imply that NPD is an excellent prototype for doping, to get a statistically homogeneous large bulk functional material with extraordinary textures which may have obvious or even conclusive influences on the properties. As the preliminary attempt, nitrogen is expected to be doped into the NPD, and the evaluation on the expected product is thought to be helpful to understanding the NPD better and an important reference for doping the NPD with other elements.

詳細は当センターホームページ：http://www.ehime-u.ac.jp/~grc/をご覧ください
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