

Synthesis and applications of nano-polycrystalline diamond

Tetsuo Irifune^{1*}, Toru Shinmei¹, Hiroaki Ohfuji¹, Yoshinori Tange¹, Futoshi Isobe¹, Takeshi Arimoto¹, Norimasa Nishiyama², Takehiro Kunimoto³

¹Geodynamics Reserach Center, Ehime University, ²Deutsches Elektronen Synchrotron, ³JASRI, SPring-8

Diamond is known to be the hardest material, which is synthesized by high-pressure and high-temperature or chemical vapor deposition techniques. Successful synthesis of sintered bodies of polycrystalline diamond was first reported in 2003, which was found to have peculiar nano-textures and very high hardness. We have recently succeeded to produce such nano-polycrystalline diamond (NPD) with linear dimensions of up to 1 cm, which has been used for various industrial and scientific applications. Here I will review current status of synthesis of NPD and its applications to high-pressure experiments, industrial tools, and synthesis of novel polycrystalline materials.

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