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Synthesis of nanocrystalline diamond from glassy carbon balls**N. A. Solopova,^{1,2*} N. Dubrovinskaia,² and L. Dubrovinsky¹**¹Bayerisches Geoinstitut, University of Bayreuth, D-95440 Bayreuth, Germany²Material Physics and Technology at Extreme Conditions, Laboratory of Crystallography, University of Bayreuth, D-95440 Bayreuth, Germany

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Email address: solopenok@yandex.ru (N.A. Solopova)*Phone number:* +49 (921) 553878**Abstract**

Here we report the high-pressure high-temperature synthesis of nanocrystalline diamond (NCD) from glassy carbon balls using a multianvil apparatus. Different chemical compounds were used as the synthesis and pressure transmitting media. A detailed characterization of the synthesis products was performed using optical microscopy, Raman spectroscopy and scanning electron microscopy (SEM). Fully optically transparent nanocrystalline diamond micro-balls and lenses with the size of about 15-40 μm were synthesized at a static pressure of 18 GPa in the temperature range of 1850-2000 $^{\circ}\text{C}$ using MgO as a pressure medium.

Keywords: A1 Recrystallization; B1 Glassy carbon balls; B1 Nanomaterials; B1 Diamond; B3 Multianvil apparatus; B3 Raman spectroscopy

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