



International Conference “Functional Materials”



ICFM - 2013

ABSTRACTS

Ukraine, Crimea, Partenit
2013

The conference is dedicated to
150th Anniversary of V. I. Vernadsky
95th Anniversary of Taurida National V. I. Vernadsky University

FUNCTIONAL MATERIALS-2013

ABSTRACTS of International Conference "Functional Materials" ICFM'2013

September 29 – October 5, 2013
Ukraine, Crimea, Yalta, Haspra

Simferopol
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У книзі представлені тези доповідей Міжнародної конференції «Функціональні матеріали-2013» ICFM'2013. Конференція присвячена актуальним проблемам фізики, технології та застосування нових матеріалів і структур з певними функціональними властивостями.

Для учених та аспірантів, які працюють в області фізики, технології і застосування функціональних матеріалів.

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In the book are presented reports abstracts of International Conference “Functional Materials - 2013” ICFM'2013. Conference is devoted to actual problems of physics, technology and applications of new materials and structures with the certain functional properties.

For scientists and graduate students in the field of physics, technologies and application of functional materials.

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Функциональные материалы – 2013: Тезисы Международной конференции «Функциональные материалы» ICFM'2013, 29 сентября – 5 октября, 2013 г. Научное издание / Под редакцией В. Бержанского. – Симферополь, ДИАЙПИ, 2013. – 502 с.

В книге представлены тезисы докладов Международной конференции «Функциональные материалы-2013» ICFM'2013. Конференция посвящена актуальным проблемам физики, технологии и применения новых материалов и структур с определенными функциональными свойствами.

Для ученых и аспирантов, которые работают в области физики, технологии и применения функциональных материалов.

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BQ-1P/14 NMR Study of Nanodiamond to Onion Transformation

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Onion-like carbon (OLC) has attracted much attention due to their unique properties for the number of applications [1]. We report on nuclear magnetic resonance (NMR) study of the process of high temperature nanodiamond-to-onion transformation. We measured ^1H and ^{13}C NMR spectra of the initial nanodiamond (ND) sample and those annealed at 600, 700, 800 and 1800 °C. For the samples annealed at 600 to 800 °C, our NMR data reveal early stages of the surface modification, as well as progressive increase in sp^2 carbon content on rising annealing temperature. It correlates with EPR data on the sensitivity of the dangling bond EPR line width to air content, progressing on the rise of the annealing temperature that evidences consequent graphitization of the external layers of the diamond core. The sample annealed at 1800 °C shows complete conversion of nanodiamond particles into carbon onions.

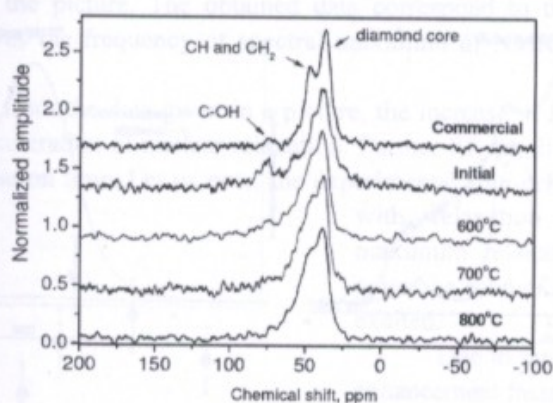


Fig. 1. ^1H - ^{13}C Cross Polarization Magic Angle Spinning (CP MAS) spectra of the initial, ND-600, ND-700, and ND-800 samples in comparison with the purified commercial ND sample

Reference

- [1] Panich A.M., Nuclear Magnetic Resonance Studies of Nanodiamonds. Review article. *Critical Reviews in Solid State and Materials Sciences* **37**, 276–303 (2012).