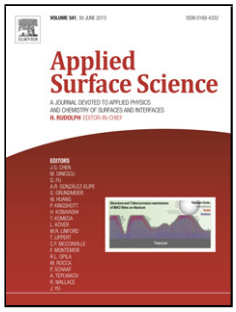

Title: Spatially Resolved Nanostructural Transformation in Graphite under Femtosecond Laser Irradiation

Author: A. Marcu L. Avotina C. Porosnicu A. Marin C.E.A. Grigorescu D. Ursescu M. Lungu N. Demitri C.P. Lungu

PII: S0169-4332(15)01542-1
DOI: http://dx.doi.org/doi:10.1016/j.apsusc.2015.06.194
Reference: APSUSC 30715

To appear in: *APSUSC*

Received date: 17-4-2015
Revised date: 11-6-2015
Accepted date: 29-6-2015

Please cite this article as: A. Marcu, L. Avotina, C. Porosnicu, A. Marin, C.E.A. Grigorescu, D. Ursescu, M. Lungu, N. Demitri, C.P. Lungu, Spatially Resolved Nanostructural Transformation in Graphite under Femtosecond Laser Irradiation, *Applied Surface Science* (2015), http://dx.doi.org/10.1016/j.apsusc.2015.06.194

- Polycrystalline graphite was irradiated with a high power fs (IR) laser
- Presence of a diamond peak was detected by synchrotron XRD
- XPS and Raman showed in-depth sp^3 % increase at tens of nm below the surface
- sp^3 % is increasing with laser power density but it is independent of photon absorption rate
- Graphite crystallite size locally increase at tens of nanometers below the irradiated spots