Materials World Network in NanoStructured Carbons (DMR-Award #0806521)

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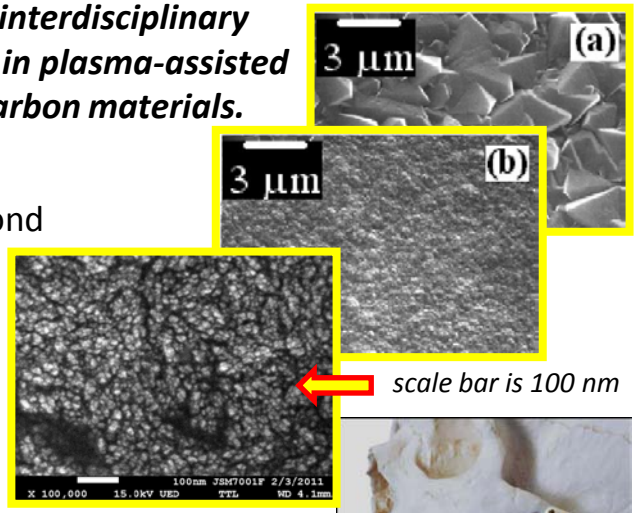
This project is an international interdisciplinary research and training program in plasma-assisted processes of nano-structured carbon materials.

Network members and collaborators: Technical U of Lodz, (Poland, primary); ParisTech - Cluny Center (France); Koszalin U of Technology (Poland); Aalto U (Finland); Technical U of Liberec (Czech Republic)

Results:

- Multialyer micro-/nano-diamond coatings on biomedical alloys. Such coatings can significantly increase the service life of biomedical implants, and can reduce associated health risks



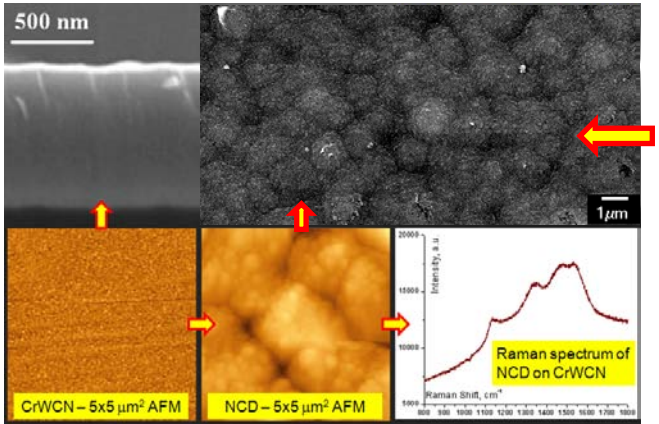
scale bar is 100 nm

SEM images of (a) microcrystalline, (b) "nano", and (c) smooth "ultra-nano" diamond coatings on Titanium alloy implant, e.g., on TMJ implant from Biomet®Microfixation

The **S(INTER)²ing** (**S**tudents' **INTER**national **INTER**disciplinary train**ing**) is a key part of this MWN project. Sixteen UAB students participated in research and training activities in Europe.

Results:

- Seedless deposition of nanocrystalline diamond on multinary interface layers



AFM and SEM images of a WC-Cr-N interface layer and NCD grown on such layer

International conferences organized/co-organized: VaPSE 2009 Czech Republic (2009); 5th Wide Bandgap Materials – Progress in Synthesis and Applications Int. Conf. (2010); 7th Diamond and Related Films Int.Conf (2010); 1st and 2nd US-Poland Workshop on Nanoscale Diamond Materials (2009 and 2010); NANOSMAT-6 (2011) (all in Poland), NANOSMAT-USA (Tampa, 2012).