

## **Tuning synthesis between carbon nano-tubes, carbon nano-onions and graphene in the same reactor**

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A review of our achievements in the field of single-walled carbon nanotubes (SWCNTs) synthesis by means of pulse laser vaporization will be presented. Statistic results about the influence of different technological parameters on the SWCNTs synthesis will be reported. A new laser ablation chamber designed for Kr-F excimer laser experiments and a new route for target preparation will be reported. Based on our best knowledge, there is no reported data about the possibility of using only graphite cement for target preparation in such experiments. In our experiments, the use of this graphite precursor has eliminated the need for pressing or hot pressing treatments.[1,2] Comparison in between this new route and the classic one in terms of SWCNTs production will be reported. We will report results about the influence of the ablation target composition on the formation of SWCNTs as well as the influence of the carrier gas used in the experiments. Finally, tuning the target composition as well as the ablation parameters we were able to synthesize carbon nano-onions and graphene using the same reactor. These studies were done on graphite targets undoped or doped with metallic catalysts such as mono-component dopants such as Co, Ni, Pt or bi-component dopants like Co/Ni or Co/Pt.

All reported results are based on morphological and structural characterization performed by Transmission Electron Microscopy, micro-Raman spectroscopy and Thermogravimetric analysis.

1. P-M. Bota, D. Dorobantu, I. Boerasu, D. Bojin, M. Enachescu, *Materials Research Innovations*, vol. **19**, no. **1**, 33 (2015).
2. P-M. Bota, D. Dorobantu, I. Boerasu, D. Bojin, M. Enachescu, *Surface Engineering and Applied Electrochemistry*, vol. **50**, no.4, 294 (2014).