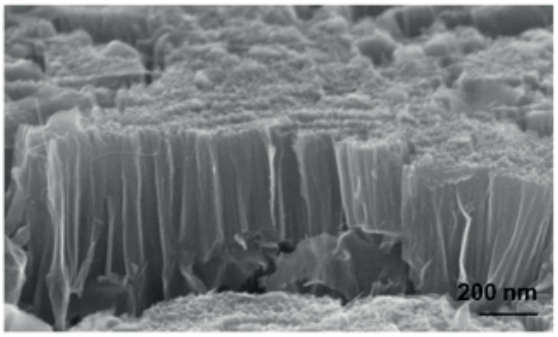
NACE CODE M72

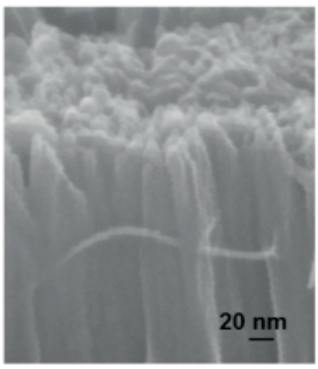
GROWTH OF NANO-CARBON ARCHITECTURES ON SiC

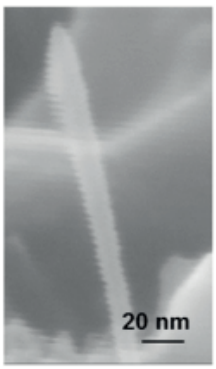
Innovations and Benefits - The carbon nano-structures grow from SiC by CO2 laser annealing of SiC, without using metal catalyst, therefore this process does not require further chemical purification treatments.

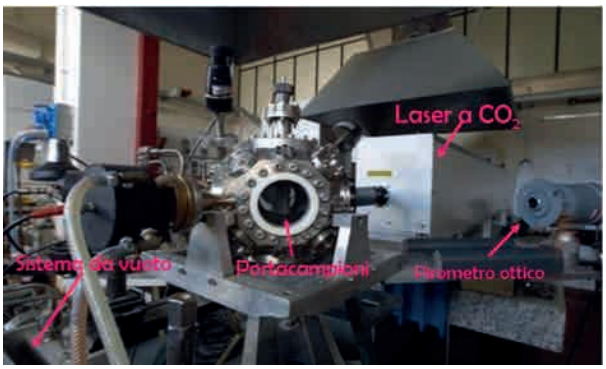
Use - By varying the process parameters, it is possible to obtain different carbon nano-structures. Carbon-nanotubes, which grow with an orthogonal orientation respect to the substrate, can be used as miniaturized electron emitters.

Applications and ongoing Activities - Optimization of process parameters to control the nano-tube growth. Study of conditions to obtain mono-layer graphene.









Riferimenti:
S. Botti, R. Ciardi, L. Asilyan, L. De Dominicis, F. Fabbri, S. Orlanducci, A. Fiori "Carbon nanotubes grown by laser annealing of Si-C nanoparticles" Chem.Phys. Lett. 400, 264-267 (2004).
S. Botti , L.S. Asilyan, R. Ciardi , F. Fabbri , S. Loreti , A. Santoni , S. Orlanducci, "Catalyst-free growth of carbon nanotubes by laser-annealing of amorphous SiC films", Chem. Phys. Lett. 396, 1–5 (2004) S. Botti, R. Ciardi, M. L. Terranova, S. Piccirillo, V. sessa, M. Rossi, M. Vittori-Antisari, "Self-assembled carbon nanotubes grown from nanosized carbon particles adsorbed on silicon", Appl. Phys.Lett. 80, 1441-1443 (2002)

RESEARCH TO PROVE FEASIBILITY | TECHNOLOGY DEMONSTRATION | SYSTEM TEST, LAUNCH & OPERATIONS

BASIC TECHNOLOGY RESEARCH | TECHNOLOGY DEVELOPMENT | SYSTEM/SUBSYSTEM DEVELOPMENT

TRL 1 | TRL 2 | TRL 3 | TRL 4 | TRL 5 | TRL 6 | TRL 7 | TRL 8 | TRL 9

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Fusion and Technology for Nuclear Safety and Security Department
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Photonics Micro and Nanostructures Laboratory
Contact: Sabina Botti - sabina.botti@enea.it