DIPARTIMENTO DI MATEMATICA E FISICA "NICCOLÒ TARTAGLIA"

Synthesis of nanoparticles and integration in devices: from nanomaterial research to real-world products

Introduce:
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Abstract

One of the main issues to be addressed to exploit nanomaterial peculiar properties into advanced devices regards nanoparticle manipulation. Among proposed approaches, nanoparticle beam deposition turned out to be an effective solution for direct integration of nanoparticle in devices, in form of nanostructured films. Soft-assembling and ballistic growth, account for peculiar properties of nanoparticle-assembled films, such as nanoscale porosity, large specific area, surface roughness.
Methods for nanoparticle production and deposition based on flame spray pyrolysis (FSP) and pulsed microplasma cluster source (PMCS) will be described. Particular emphasis will be given to solutions for the coupling of nanoparticle sources with jet expansion, to generate nanoparticle beams. Produceable material library includes noble metals, simple oxides, complex oxides and nanocomposites, which can be exploited in several technological areas, ranging from battery materials to catalysis, from photovoltaic to biomedical devices. Examples of nano-enhanced devices in the fields of sensing, oncological diagnosis and proteomics will be reported.

Seminario

Mercoledì 17 febbraio 2016
Sala Riunioni, ore 11.30
Via dei Musei 41 - Brescia

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