

29th International Conference on **Nanomaterials and Nanotechnology**
&
4th Edition of International conference on
Advanced Spectroscopy, Crystallography and Applications in Modern Chemistry
April 25-26, 2019 Rome, Italy

Nanomaterials in industrial application: the role of additive layer manufacturing

Francesca Nanni, M. Rinaldi, M. Bragaglia and F.R.Lamastra
University of Rome Tor Vergata, Italy

Polymer nanocomposites have been widely used in many engineering applications, due to their interesting properties, particularly as they can provide specific functionalities that make the material smart or multifunctional. Moreover, despite their cost is quite high compared to that of other fillers, very small amounts are needed to produce massive change of macroscopic properties, so that industrial application is possible. Different types of nanofillers have been successfully proposed in the literature and in commercial devices to suit specific applications as carbon nanofillers (nanotubes, graphene, CB, etc.) to provide electrical conductivity, thermal conductivity, and electromagnetic properties and inorganic nanoparticles (nanoclays, nanosilica, BN, nanomagnets, etc.) to provide mechanical resistance, thermal insulation, barrier properties, drug delivery, etc.

The next challenge of such materials is their use in the production of polymeric additive manufacturing (ALM) components. At present, in fact, only few polymeric materials are available for ALM, almost none of them nanostructured. In the present talk an overview of the state of the art of ALM printed polymer nanocomposites is provided. In particular, starting from an holistic point of view, where design, printing process and material are closely interconnected, it will be discussed how printing parameters should be changed when processing different type of polymeric nanocomposites, as well as how a not optimized ALM can affect the final material's properties. Examples of the use of polymeric ALM in industrial applications will be presented too.

fnanni@ing.uniroma2.it

Notes: