Molecular Nanostructures Covalently Assembled on Functionalized surfaces

Antonino Gulino,* Luca Spitaleri, Trusso Sfrazzetto Giuseppe, Ignazio Fragalà

Department of Chemical Sciences, University of Catania and INSTM UdR of Catania,Viale Andrea Doria 6, 95125 Catania (Italy)

*corresponding author: agulino@unict.it

Low dimensional nanostructured materials are building blocks for the next generation technology [1]. The attractive properties displayed by these nanostructures depend on their atomic scale structures that can be tailored for appropriate physico-chemical functions [2]. The design and synthesis of these organic-inorganic hybrid molecular materials by the bottom-up approach result in the fabrication of functional nanocomposites that display structural control [3,4]. These systems find wide applications in various electronic, magnetic and/or photonic devices such as memories, sensors, switches, organic light-emitting diodes, organic field effect transistors, molecular machines and, in general, stimuli-responsive materials (SRMs). SRMs undergo reversible changes in one or more properties upon application / removal of an external stimulus. Engineering of inorganic surfaces by covalent assembly of functional molecules (Figure 1) represents the most suitable approach for the synthesis of these SRMs nanomaterials and subsequent integration within electronic and/or optic circuits.

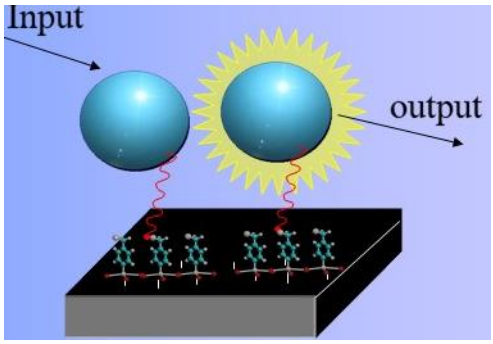

Figure 1. Covalent assembly of functional molecules on appropriate surfaces.

[1] R. K. Joshi, J. J. Schneider, *Chem. Soc. Rev*. 41 (2012) 5285-5312.

[2] Low-Dimensional and Nanostructured Materials and Devices. (Eds.: H. Ünlü, N. J. M. Horing, J. Dabowski), Springer, Heidelberg (2016).

[3] P. Murugan, M. Krishnamurthy, S. N. Jaisankar, D. Samanta, A. B. Mandal, *Chem. Soc. Rev*. 44 (2015) 3212-3243.

[4] J. L. Zhang, J. Q. Zhong, J. D. Lin, W. P. Hu, K. Wu, G. Q. Xu, A. T. S. Wee, W. Chen, *Chem. Soc. Rev*. 44 (2015) 2998-3022.