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Graphene oxide nano-hybrid as innovative material for photo-stimulated NO release and photo-thermia

Sabrina Conoci¹, Salvatore Petralia¹, Marta Perez Lloret², Jiri Mosinger³ and Salvatore Sortino²

¹STMicroelectronics, Italy

²University of Catania, Italy

³Charles University in Prague, Czech Republic

Graphene Oxide (GO) is a low cost material having a wide range of potential uses in many research areas, including energy storage, nano-electronics, molecular bio-sensing and catalysis. GO is a hydrophilic, water-dispersible biocompatible compound. Due to its sheet-like structure, GO has a very large surface area and the presence of hydroxyl, epoxy and carboxyl groups on its surface enables its easy functionalization. The two external surfaces are ideal for drug loading through chemical conjugation or physical interaction, reaching values close to 200%, considerably higher than those observed for nanoparticles or other drug delivery systems. Due to its peculiarities, GO nano-therapeutic platforms carrying bioactive compounds ranging from small drug molecules to high molecular weight bioactive compounds such as antibodies, polynucleotides and proteins has been recently deeply investigated. In this contribution, we report a GO covalently bounded with a nitroaniline derivative nitric oxide (NO) photo-donor. This hybrid nano-platform is able to combine light-controlled NO release with photo-thermia when simultaneously irradiated with blue and green light, resulting in a bimodal bactericidal action against *Escherichia coli*.

Biography

Sabrina Conoci has received the Master of Science in Industrial Chemistry cum laude from the University of Bologna (Italy) in 1995 and has obtained her PhD in Engineering of Materials from the University of Lecce (Italy) in 2001 working one year at the University of Ottawa (Canada). Since 1999, she has been with STMicroelectronics, Catania (Italy), covering several R&D positions in the field of nano-molecular Devices, Biosensors and Biotechnologies. She is currently R&D Manager of the Advanced Sensor Technologies team. He has published more than 200 papers in reputed journalism, 15 international patents and more than 100 communications to international congresses.

sabrina.conoci@st.com

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