composites show the same degradation efficiencyalthough the use of s-PBC-GO membrane for MO dye removal from water seems to be a safer method than the use of s-PBC–TiO_2 membrane. The possibility to recover easily the materials at the end of the processes, regenerating them and reusing for consecutive process is also shown.

#P065 - Silicon nitride as graphene substrate in device design

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One of the most severe limits in future design of graphene-based electronic devices is that, when supported on a substrate, the carrier mobility of graphene (G) is often reduced by an order of magnitude or more. Ultra-thin β-Si_3N_4 can be used as high-K dielectric to overcome this problem. In this work we present the results of the first experimental characterization of the G/β-Si_3N_4(0001)/Si(111) interface. First, the β-Si_3N_4 film was grown under UHV conditions and thoroughly investigated by scanning tunneling microscopy (STM). Subsequently, a G flake has been transferred on top of it by a PMMA-based transfer technique. The structural and electronic investigation of this prototypical interface has been conducted by STM and μ-Raman spectroscopy showing a high quality of the graphene layer with a low number of defects. This study demonstrates that β-Si_3N_4(0001)/Si(111) has strong potential as platform for future graphene-based electronic device applications.

#P066 - A WEARABLE ELECTRO-CHEMICAL SENSOR FOR THE DETECTION OF REDOX-ACTIVE BIOMOLECULES

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A tremendous and growing interest is focused on the development of new wearable technology for physiological monitoring, in order to obtain a novel class of personalized point-of-care devices that could be integrated into the daily life of a patient in the form of wireless body sensors. Although most of the research efforts are converged on the production of miniaturized wearable appliances based on relatively mature technologies, such as motion tracking, a remarkable ability would be the chemical sensing of bio-markers in body fluids. Several wearable sensors, mainly based on an electrochemical transduction, have been developed, however they often require the implantation of electrodes and the use of a relative-bulky read-out electronics. To overcome these drawbacks a good solution is the monitoring of biomarkers in sweat through wearable sensors that are merged with the textile, obtaining a device that really "disappears" inside the cloth. Recently, the potentiality of textile Organic electrochemical transistors (OECTs) for the detection of ions and adrenaline has been shown [Coppedè et al., J. Mater. Chem. B, 2 (2014) 5620], but the sensing process should be studied in depth in order to control and fully exploit their properties and performance . This contribution reports on the huge potential of OECTs as wearable chemical sensors for the detection of bio-compounds in sweat [I.Gualandi et al Sci.Reports in press (2016)]. In an OECT the current flowing in the channel (a stripe of conductive polymer) can be modulated through the voltage applied to the gate electrode by electrochemical reactions that take place in an electrolytic solution. Since the device is the combination of a sensitive element and an amplifier, OECTs directly amplify the electro-chemical signals. These transistors are made by screen printing on different textiles and they exhibit very appealing features for wearable sensors: 1) the operating potentials are very low (< 1 V), a key point considering that the device must be placed in direct contact with skin; 2) since the current used as signal is quite high (> 1 mA), it requires a simple readout electronics ; 3) the absorbed power is very low (< 10-4 W); 4) it can be deformed without observing a degradation of its electrical features. Moreover the stability of the OECT we have developed has been assesed under washing conditions. The potentialities of the here described OECT as a sensor were tested using different redox active bio-molecules (adrenaline, dopamine and ascorbic acid). All tested analytes react with PEDOT:PSS by extracting charge carriers from the transistor channel and leading to a logarithmic decrease of the drain current for increasing concentration. The OECTs sensing capability has been assessed in two different experimental contexts: i) totally dipped in an electrolyte solution, to evaluate their performance in the ideal operation; ii) in air, by sequentially adding few drops of electrolyte solution in the sensing area in order to simulate the exposure of the fabric to human sweat in real applications.

#P067 - Bottom-up approaches based on block copolymer self-assembly for the fabrication of nanoscale RRAM

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