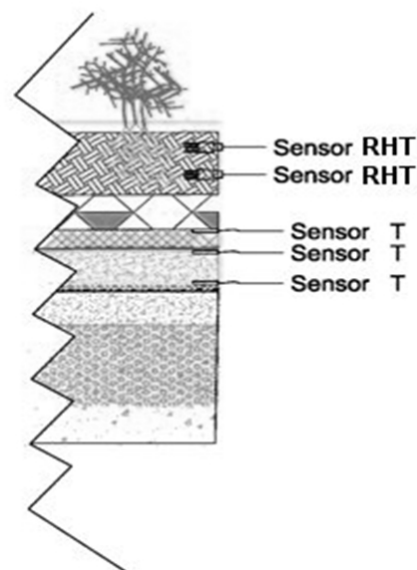


14ASI52 Data Acquisition for Green Roof

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Green roof represents a sustainable solution in urban environment providing several benefits such as ecological advantages, stormwater management and energy saving. Numerous studies have focused on the evaluation of the efficiency of green roof by monitoring thermo-physical variables. Whereas most of the studies have been conducted in cold weather conditions, only little research has been performed in Mediterranean climate. An extensive green roof, divided into four compartments, characterized by different layers and materials is built on the 46C Building at the University of Calabria (Italy), in order to analyse the effect of the diverse components on thermo-physical behaviour of the system. The experimental site is equipped with measurement instrumentation and data acquisition system to continuously monitor thermo-physical parameters, such as temperature and water content throughout the entire stratigraphy. The monitoring data will be used for evaluating the thermo-physical behaviour of the green roof in Mediterranean climate.

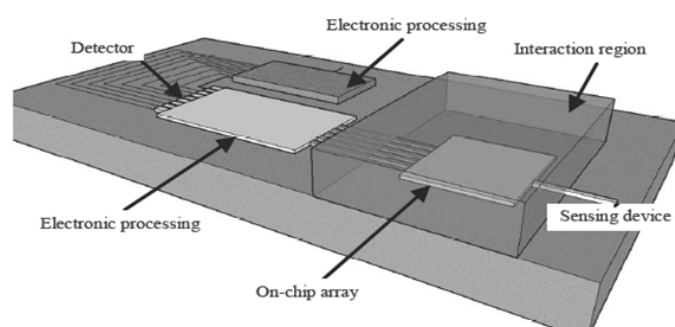


Positioning of the sensors in the roof layers.

15ST003 Carbon/polymer hybrid bio-sensors for neurotransmitters analysis

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A new concept of hybrid bio-sensors are proposed for collecting microfluidic probes, in order to study and treat neurological disorders. The micro-electrode features at nanoscale are based on incorporating via electropolymerization of oxidized conjugated polymer - as charge-balancing - with dopants (e.g. Pyrrole derivatives, PEDOT, ProDOT, ProDOP and their copolymers), at the surface of carbon structures with nanopores of predefined architectures. The mechanical, fatigue and adhesion properties of the experimental coatings were assessed by using nanoindentation, high frequency impact and scratch specific tests. The electrochemical characterization (Potentiostat/Galvanostat method) was performed by using reference redox molecules such as ferricyanide, p-aminophenol, hydroquinone etc. Some applications were emphasized by testing the sensors sensitivity and reproducibility at different concentrations of dopamine, epinephrine and norepinephrine in acid medium (0.1 M HCl). In order to tailor the hybrid bio-sensors for medical applications, the potential interferences within biological samples of ascorbic acid, uric acid etc. were also taken into account. Finally, a functional on-chip model was developed, by integrating: interaction area (microelectrode exposure array), detection area (detection circuits) and processing and transmission area (signal processing and communication features).



Example of lab-on-chip concept for the detection and survey of neurotransmitters