Nanoinnovation in chemical sensors for the automotive field

Today, a variety of smart sensors are present in modern vehicles to collect a lot of data helpful for their management. Among these, chemical sensors are used for example to increase vehicle performance, safety and passenger comfort. Such sensors are getting improved in terms of quality, smartness and they are more specific and robust than in the past.

During the past years, the use of sensor and measurement technology was mainly devoted to improvements in engine performance and higher energy efficiency. So, the application of oxygen sensors primarily for stoichiometric control of the engine operation has driven the demand for chemical sensors in the automotive industry for decades. Growing concerns about environmental pollution and increasing number of government initiatives to control the emission is now fueling the demand for new chemical sensors in the automotive field. Many of these sensors are mainly focused for guarantee the passenger comfort and safety.

Through various case-studies from our laboratory, an overview of these high performance sensors is here presented, highlighting the fundamental role that nanotechnologies are playing in the innovation of processes for their realization.