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## New strategies for the synthesis of electroactive smart materials

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**Abstract:** In essence, nanotechnology is the ability to manipulate matter at the atomic scale, with the intention of creating structures with a different molecular organization using atoms as fundamental parts, aiming at a stronger, cheaper, lighter product with accurate and appropriate properties. Due to recent discoveries involving nanostructured materials, old areas of interest in research and technology received a new and challenging stimuli. Application areas such as sensors and energy storage, have significantly explored the possibility of using nanostructured materials in order to obtain higher performance instruments. Nanostructures can play different roles in medical applications devices, either as active materials, high surface area substrates, drugs chargers, etc. In turn, electrochemistry is a valuable tool as a diagnosis method in the case of sensors and, more recently, as an impulse activator for drug releasing devices. Moreover, all these applications involve the search and the synthesis of new materials for electrode or electrolyte involving a higher performance of electrochemical devices. Further, it is important to investigate the relationship between structure and / or geometry that is induced by the nano-sized materials and its electrochemical reactivity. The question that must be answered is what is the effective gain in performance of different materials for specific applications and if this performance can be tuned depending on the manipulation of the relative size / geometry..

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