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Advanced electrode materials for hybrid energy storage

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If nanotechnology is an Enabling Technology, Energy Storage is also increasingly recognized as a key technology to enable our ongoing transition to a sustainable energy model. Electrochemical energy storage will be a key to this transition but is still far from optimal. That is why there is still plenty of room for novel types of materials in this trade. Hybrid Nanocomposite Materials offer opportunities for synergy and improved properties. Those formed by electroactive and conducting components are of particular interest for energy storage applications. We have developed a whole line of work dealing with hybrid electroactive and conductive materials for energy storage applications. In this conference we will address some of our recent work towards hybridizing energy storage discussing hybrid electrodes formed by nanocarbons and polyoxometalates or oxides. Furthermore, we will show how hybrids can be designed to take advantage of dual energy storage mechanisms by combining the typical capacitive behavior of supercapacitors with the characteristic faradaic activities of batteries.

Biography

Pedro Gomez-Romero (PhD in Chemistry, Georgetown University, USA, 1987, with Distinction) is a CSIC Researcher since 1990. Presently, he is a Full Research Professor (2006) and Group Leader of NEO-Energy lab at ICN2 (CSIC), Barcelona, Spain (2007-). He is an expert on hybrid organic-inorganic nanostructures, nanocomposite materials for energy storage and conversion (lithium batteries, supercapacitors, flow batteries, solar-thermal energy, nanofluids). He is the author of ca. 200 publications, Scientific Editor of the book "*Functional Hybrid Materials*" and author of two award-winning popular science books.

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