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Hydrazine-borane derivates as promising chemical hydrogen storage system. A boron-nitrogen bond study by UV-photoelectron spectroscopy and quantum calculations

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The major challenge of the XXI century is probably related to our ability to provide an efficient and cost-effective energy transition, but also to propose alternative solutions and processes environmentally friendly. The discovery of new sources and new methods of operation will determine our energies for the future. Thus, all forms of research dedicated to this problem are to consider, especially as conventional reserves deplete. In this context, hydrogen is one of the principal candidates as clean fuel and hydrazine-borane derivatives are promising as chemical hydrogen storage systems. On the other hand, ultraviolet photoelectron spectroscopy (UV-PES) is a well-established technique to provide ionization energies of molecules in gas phase. These experimental data supported by quantum calculations for the consistency of the assignments of PE bands allow to reach fundamental information about electronic structure and bonding that is obtained by no other technique. Representative examples to illustrate the advantages and wide applicability of this approach will be exclusively chosen from our research in the field hydrazine-borane derivatives and in particular on the nature of boron-nitrogen bond versus substitution on each atom.

Biography

Javier Torres Escalona has completed his Master in Chemistry at age of 25 years from Castilla-La Mancha University. He is currently a 3rd year PhD candidate at the Pau University doing his doctoral research at the Research Institute on Analytical Sciences and Physical Chemistry for Environment and Materials (IPREM).

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