Existeix el pal·ladi (VI)?

Chemists in Japan claim the first isolation and structural characterization of two formally hexavalent palladium complexes [Science 295, 308 (2002)]. The new formal Pd(VI) complexes are described by Wanzhi Chen, Shigeru Shimada, and Masato Tanaka of the National Institute of Advanced Industrial Science & Technology (AIST), in Tsukuba. In these complexes, the Pd(VI) center is surrounded by six silicon atoms. These complexes are "organometallic, at least in spirit, because silicon is the nearest chemical relative of carbon", states Yale University chemistry professor Robert H. Crabtree.

However, Santiago Alvarez and Gabriel Aullón at the Departament de Química Inorgànica, Universitat de Barcelona, have presented angles in favor of a formulation of such compound as a Pd(II) species with two \( ^{2+} \)-coordinated Si-Si single bonds.

Espones cristal·lines: magatzems de gasos

A new family of highly crystalline, porous materials in which the size and chemical functionality of the pores can be tailored systematically shows promise for gas-storage applications. Omar M. Yaghi and his coworkers (University of Michigan, Ann Arbor) call the materials IRMOFs—which stands for isoreticular metal-organic frameworks. They consist of cubical 3-D networks of zinc-oxygen clusters connected by molecular struts such as 1,4-benzeneedicarboxylate. By choosing connectors based on longer molecules such as terphenyl, the chemists have shown that they can expand the pore size in increments from 3.8 to 28.8 Å [Science, 295, 469 (2002)].

La Química Supramolecular s’acosta a les biomolècules

Professor M. J. Hannon and colleagues at the University of Warwick, in collaboration with E. Moldrheim and E. Sletten at the University of Bergen, and Virtudes Moreno and M.J. Prieto at the Departament de Química Inorgànica, Universitat de Barcelona, have studied the intramolecular DNA coiling mediated by supramolecular systems [Proc. Natl. Acad. Sci., USA, 99, 6069 (2002)]. The two enantiomers of the tetracationic metallo-supramolecular cylinder (with a triple helical architecture) bind differently to DNA and have different structural effects. The M helical cylinder binds to the major grove and induces dramatic intramolecular coiling. The DNA bending is less dramatic for the P enantiomer.

Els gasos nobles, cada cop més reactius...

On the other hand, argon, krypton, and xenon interact with the uranium atom forming the first noble gas–actinide complexes, according to spectroscopic studies and supercomputer simulations [Science, 295, 2242 (2002)]. Professor Lester Andrews and graduate student Binyong Liang at the University of Virginia find that CUO—formed from the reaction of laser-ablated uranium atoms with carbon monoxide in a frozen noble-gas matrix—exhibits very different stretching frequencies in solid argon than in solid neon.

... i els radicals, cada cop més estables

A singlet diradical designed by an international team of chemists (David Scheschkewitz, Hideki Amii, Heinz Gornitzka, Wolfgang W. Schoeller, Didier Bourissou, and Guy Bertrand from the University of California, Université Paul Sabatier and Universität Bielefeld) is stable for months at room temperature [Science, 295, 1880 (2002)]. It consists of alternating phosphorus and boron atoms in a planar, four-membered ring in which all phosphorus-boron bonds are equal. Antiparallel free electrons are borne by the boron atoms. Molecules containing many nonbonding electrons could lead to new superconducting materials or compounds with magnetic properties.

Breus

- Dels cent anys de premis Nobel, només en dotze ocasions s’han atorgat a químics sintètics.
- L’American Chemical Society ha penjat a Internet totes les seves revistes des del primer número (1879): http://pubs.acs.org/archives/index.html
- La quiralitat pot veure’s a partir d’un test de color [Chem. Commun., 2002, 174].
- Les llibretes de laboratori de Linus Pauling ara són a l’abast de tothom: http://osulibrary.orst.edu/specialcollections/rnb/index.html