La química combinatorial catalitza el descobriment de nous catalitzadors

A new class of single-site catalysts for olefin polymerization has been discovered. The new amido-ether-based hafnium catalysts were found using a fully integrated high-throughput screening methodology [V. Murphy and col., J. Am. Chem. Soc., 125, 4306 (2003)]. The new screening methodology enabled them to do in days or weeks what used to take many months or years.

The researchers set out to discover new catalysts with potential for the production of linear low-density polyethylene, which is a copolymer of ethylene and an α-olefin, such as 1-octene. They first synthesized a library of hafnium and zirconium complexes containing 23 different bidentate and tridentate ligands. To screen these complexes under different activation conditions, they carried out 384 polymerization experiments in just a few hours.

Quimica prebiòtica: el naixement de l’amoníac

Günter Kreisel and Wolfgang Weigand at the University of Jena, in Germany, and coworkers have developed a lab method to prepare NH3 from N2 under conditions that they believe could have existed during the prebiotic era [Angew. Chem. Int. Ed. 42, 665 (2003)]. The structure acts as a nanoscale flask, inside which guest molecules can react.

Un parell d’ions segrestat

A new approach to anion recognition that uses electrostatic and hydrogen-bonding interactions has been developed. The authors embedded a tetramethylammonium cation (golden spheres) in the pocket of a resorcin[4]arene molecule functionalized with bulky amide substituents. The complex selectively binds to a chloride anion (green sphere) in solvents such as methanol [J. L. Atwood and A. Szunya, Chem. Commun., 2003, 940].

The molecular host capsules are robust. The cation binds to the interior of the capsule by π interactions with eight surrounding aromatic rings. Though not covalently bound, it remains remarkably stable over a variety of conditions. The guest chloride anion is bound by hydrogen bonding to the hydrogen atoms of the host molecule’s amide groups.

Breus

- Les memòries del neuròleg Oliver Sacks (Londres, 1933) El tío Tungsteno (Anagrama, Barcelona 2003) són, de fet, una història de la Química amena i estimulant.
- S’ha proposat el nom de Darmstadtí (Ds) per a l’element 110, en reconeixement de la ciutat alemanya a on ha estat preparat.
- Els manuscrits d’Einstein es poden trobar a Internet: http://alberteinstein.info
- El compost Al,H, analòg del diborà, ha estat detectat per espectroscòpia infraroja [L. Andrews and X. Wang; Science, 299, 2049 (2003)].

L’element número 10, Be, va ser descobert l’any 1896 per W. Ramsay i M. Travers. El seu nom prové de la paraula grega νεός, que vol dir nou.