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Espanya expulsada de la IUPAC !!!

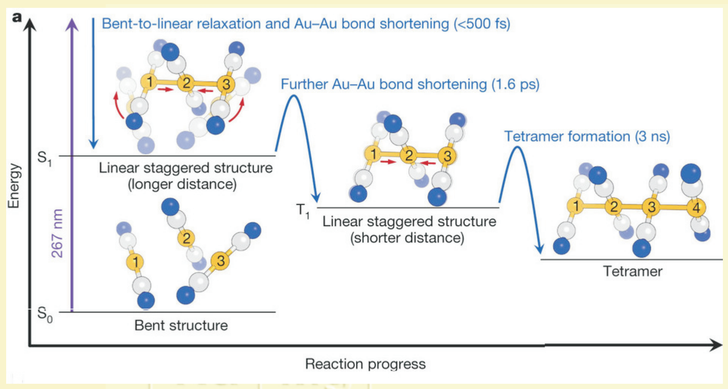
"Dear Bureau Members, I write to update you on the membership status of a number of NAOs. As you are aware Statute 9.2 provides that any Adhering Organization in arrears for a period of twenty-four months from the due date shall automatically cease to be a Member of the Union. I therefore regret to inform you that five NAOs ceased to be members on January 1st 2015. The Countries that were subject to Statute 9.2 are:

1. Bangladesh (possible payment options being explored), 2. Spain, 3. Tanzania, and 4. Ukraine."

(http://us10.campaign-archive1.com/?u=b4164eab726689c3263d77509&id=85978416c9&e=05e00d96a3)

Veient com es forma un enllaç

Using an X-ray free-electron laser and time-resolved X-ray solution scattering, researchers have watched, on a femtosecond timescale, the detailed steps that occur when covalent bonds form in solution. This is the first time chemists have used the X-ray scattering technique to observe bond formation in solution. (H. Ihee et al., *Nature*, **2015,** *518,* 385; DOI:10.1038/1463). The authors have studied the femtosecond chemical and structural changes of bond formation in a noncovalent complex, $[Au(CN)_2^-]_3$. Upon excitation by a laser, the complex forms internal covalent bonds and then adds another gold group to produce $[Au(CN)_2^-]_4$.

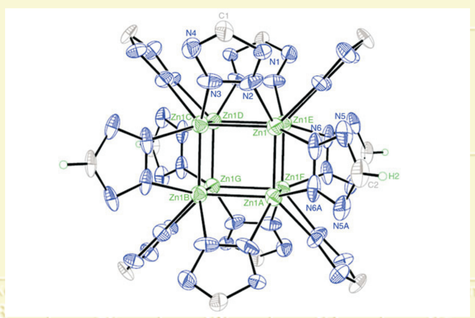


The noncovalent $[Au(CN)_2^-]_3$ complex initially has a bent geometry. Upon photoactivation, it transitions to a linear covalent configuration that undergoes further bond shortening and then adds another Au–Au bond to form a tetramer.

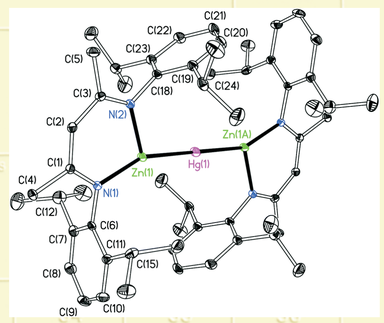
El zinc,d'actualitat

1.-Researchers (P. Cui, et al., *Nat. Commun*., **2015**, *6*; DOI: 10.1038/ncomms7331) have synthesised polyzinc clusters that have pushed back the boundaries of the kind of aromatic structures chemists can make. They have covalently bound eight zinc atoms into cubes, stabilised by sharing electrons between them all in a three-dimensional analogue to more conventional aromaticity. X-ray diffraction showed both compounds included cubic zinc cores supported by twelve tetrazole ring ligands, with each zinc atom coordinated to three nitrogen atoms; spectroscopic data confirmed the cubes comprise zinc(I) atoms.

2.- The unique trimetallic complex {(NacNac)Zn}Hg has been prepared (M.P. Blake, et al., *Chem Comm*., **2015**, *51*, 5743; DOI: 10.1039/c5cc00637f), the molecule's heart lies a Zn–Hg–Zn unit – the first example of a bond between two different group 12 metals. What's more, this metal chain is also the first example of catenation between group 12 elements other than just mercury.



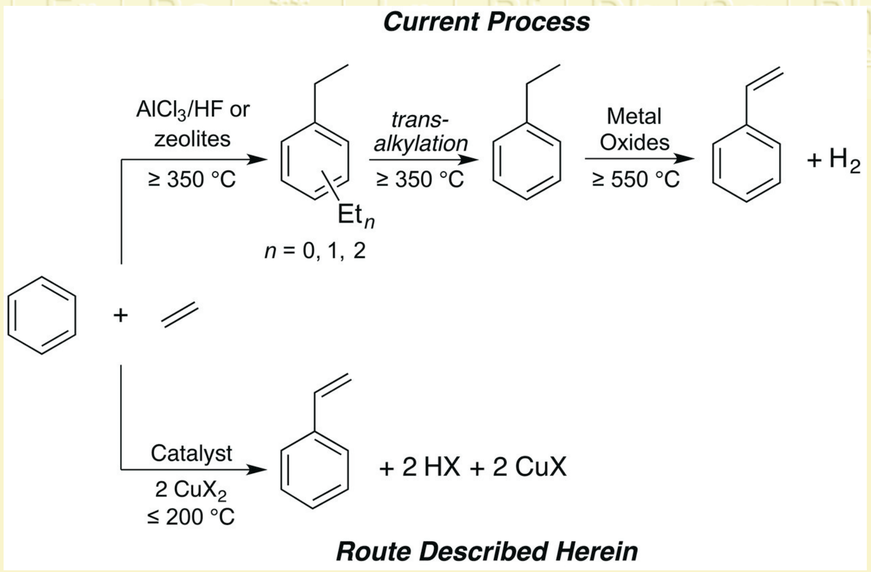
Structure of cluster $\{Zn_8(HL)_4(L)_8\}^{12-}$



Structure of {(NacNac)Zn}Hg

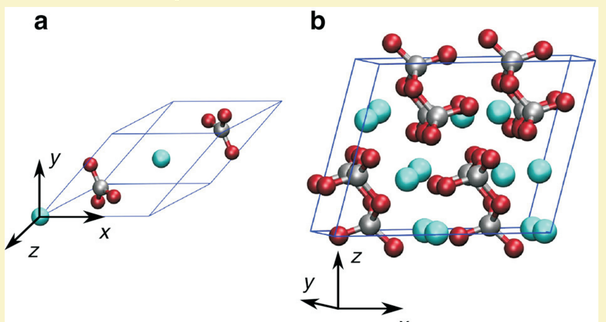
L'estirè en un sol pas

A new catalyst makes possible a long-standing research goal—synthesizing styrene from benzene and ethylene in a single step. Styrene, used for fine chemicals synthesis and plastics and elastomer preparation, is currently produced globally in the 20 million ton-per-year range, so a more efficient method could result in significant cost savings. It's generally made by using $AlCl_3$ (with HF) or zeolites to convert benzene and ethylene to ethylbenzene, followed by dehydrogenation to styrene. Now (T. R. Cundari et al., *Science,* 2015, DOI: 10.1126/science.aaa2260) have identified a rhodium catalyst that does the trick in one step. Their approach converts benzene, ethylene, and a Cu(II) reagent to styrene plus a Cu(I) compound, with 100% styrene selectivity.



Carbonat tetraèdric !

The processes affecting the global carbon cycle that occur deep inside Earth strongly influence the amount of carbon in the atmosphere and global temperatures. Yet the nature of deeply buried carbon—the compounds it forms and their structures—remains controversial. Researchers applied synchrotron spectroscopy methods and quantum calculations to study $Mg_{0.25}Fe_{0.75}CO_3$, a member of the ferromagnesite family of minerals believed to be deep-Earth carbon storage compounds. The team subjected a sample of the mineral to extreme pressures and temperatures found in the mantle, a region of Earth's interior between its core and crust. They found that at pressures greater than 80 gigapascals, the carbonate transforms from a trigonal sp^2-bonded CO_3 phase to a phase featuring tetrahedral sp^3-bonded CO_4 groups (E. Boulard et al., *Nat. Commun*., **2015**, *6*; DOI: 10.1038/ncomms7311). The phases likely differ in terms of chemical reactivity. And the high-pressure phase is likely to be more viscous, which would inhibit mobility of carbonate melts in the mantle and lead to deep carbon reservoirs, thereby affecting the global carbon cycle.



Extreme pressures, such as those in Earth's mantle, transform CO_3 units in carbonate minerals (left, lone sphere is Mg) to CO_4 units (right).

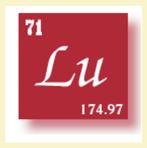
Breus

• Determinacions espectroscòpiques han confirmat per primera vegada, que l'augment de CO_2 a l'atmosfera altera la «radiative forcing», paràmetre que mesura la diferència entre la radiació estimada emesa en l'època preindustrial i l'actual. Aquest resultats confirmen les prediccions teòriques que l'efecte hivernacle és produït per emissions antropogèniques. (D.R. Feldman, *Nature*, **2015**, *519*, 339; DOI: 10.1038/nature14240).

• L'espectroscòpia Raman s'ha revelat com a una tècnica de gran ajuda dels neurocirurgians en les operacions de tumors de cervell, en permetre diferenciar cèl·lules sanes d'altres canceroses. (F. Leblond, *Sci. Transl. Med*., **2015**, *7*, 274ara19; DOI: 10.1126/scitranslmed.aaa2384)

• Estudis amb un ampli conjunt de tècniques físiques com la tomografia atòmica i l'espectroscòpia d'absorció de raigs X, entre altres, d'esmalt dental en conills, ratolins i castors, han demostrat que els components amorfos, formats principalment per fosfats de calci i magnesi (Mg-ACP), els fan més durs i resistents als àcids. (D. Joester, et al., *Science*, **2015**, *347*, 746; DOI:10.1126/science.1258950)

L'element



L'element número 71, **luteci,** fou descobert l'any 1907, independentment, pel químic francès Georges Urbain, el mineralogista austríac Karl Auer i el químic nord-americà Charles James, com a component minoritari del mineral iterbia (Vegeu, iterbi a *Not. Inorg*., **2015**, *70*). La IUPAC donà, el 1909, la prioritat del descobriment a Urbain i s'acceptà el nom, que prové del terme llatí "lutetia" amb què es coneixia la ciutat de París

Amb el luteci es completa la descoberta de les terres rares que havia començat el 1794 amb la de l'itri. És l'últim dels lantànids, i també el més dur i més dens d'aquests elements, encara que les seves propietats el situen millor en el grup 3 de la Taula Periòdica. És molt difícil d'obtenir-lo pur fet que el fa el metall més car, amb un preu que és sis vegades més elevat que el del platí. De les escasses aplicacions conegudes, a destacar com a dopant en granates de gal·li i gadolini emprats en la fabricació de memòries magnètiques.