RESEARCH HIGHLIGHTS

Selections from the scientific literature

GEOSCIENCE

How plants check global warming

Plants' response to a twofold increase in atmospheric carbon dioxide could put a much stronger brake on global warming than expected.

Greater vegetation growth in hotter, wetter climates leads to more evaporation and transpiration from leaves, and therefore more heat loss from land. Other studies have noted this effect, but Lahouari Bounoua at the Goddard Space Flight Center in Greenbelt, Maryland, and his colleagues built into their modelling study additional feedback effects — such as alterations in plants' photosynthetic activity — that further boost vegetation growth.

They predict that the effects on plants of growing in 700 parts per million of carbon dioxide would reduce expected 30-year temperature rises by around 13% globally.

Geophys. Res. Lett. **doi:10.1029/2010GL045338 (2010)**

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ZOOLOGY

Showcasing the sea's strange secrets

A bizarre worm with ten 'arms' has been discovered almost 3,000 metres below the ocean surface near Indonesia. *Teuthidodrilus samae* (**pictured**) is a newly identified genus and species of free-swimming annelid worm. Karen Osborn, currently at the University of California, Santa Cruz, and her colleagues report that it seems to be common deep in the Celebes Sea.

The 'squidworms' can reach 94 millimetres in length, and their appendages can be even longer. The worms have probably avoided detection for so long because of their ability to swim away from sampling gear and the difficulties of exploring the vast ocean depths. The strange creature shows how little we know about even common members of the sea's deep-water communities, say the authors.

Biol. Lett. **doi:10.1098/rsbl.2010.0923 (2010)**

CHEMISTRY

Tiny molecular 'water bottle'

A 'buckyball' — a spherical molecule made up of 60 carbon atoms — has been turned into a vial just big enough to hold a single water molecule, complete with its own removable stopper.

Liangbing Gan of Peking University, Wim Klopper of the Karlsruhe Institute of Technology in Germany and their team created a 60-carbon fullerene sphere with an orifice big enough for water to pass through. They show that a phosphate group can be easily attached and removed from the edge of the orifice, where it acts as a plug for the fullerene vial. With this 'stopper' removed (**pictured** left), water is incorporated into the vial 230 times faster than with it attached (right).

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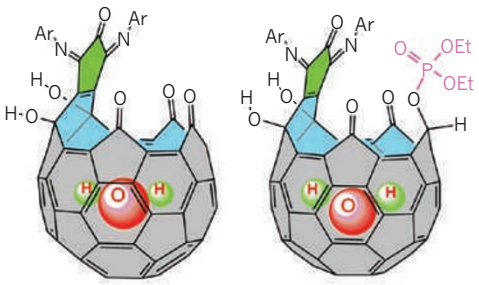

The authors say that uses for the vial could include acting as a carrier for drugs in the body.

Angew. Chem. Int. Edn **doi:10.1002/anie.201004879 (2010)**

OPTICAL PHYSICS

A peek at a molecule's guts

Advanced microscopy techniques have provided researchers with an unprecedented glimpse into a molecule. Researchers used the electron beam of a scanning tunnelling microscope (STM) to excite different parts of the molecule, causing it to emit light.

Wilson Ho and his colleagues at the University of California, Irvine, used an STM and photon detector to image molecules of magnesium porphine. The images reveal a structure with twofold symmetry, which the authors say is due to an approximately planar molecule distorting into a saddle shape. This distortion warps molecular orbitals and so changes the spectra of the emitted photons, revealing the inner structure.

Previously, optical techniques have been able to detect individual molecules