RESEARCH HIGHLIGHTS

Selections from the scientific literature

MATERIALS

Bent crystal gets back into shape

Scientists in Japan have discovered an organic crystal that can regain its structure after being deformed — the first known organic superelastic material.

Until now, superelastic materials, which change their crystal structure when mechanically stressed, were made only of metallic alloys and ceramics. Satoshi Takamizawa and Yasuhiro Miyamoto at Yokohama City University found that a terephthalamide crystal can also be superelastic.

The duo twisted the crystal, bending it and changing its molecular arrangement. When tension was released, it regained its structure without signs of material fatigue, even when the stress was applied and removed 100 times.

The advance could lead to self-repairing vehicle parts and materials that help to dampen vibrations, the authors say.

Angew. Chem. **http://doi.org/f2rqpt (2014)**

BEN THUY

PALAEONTOLOGY

Deep ocean is a safe haven

Deep-sea species might be more resilient to extinction than their shallow-water cousins.

Ben Thuy of the Luxembourg Natural History Museum and his team found fossils of at least 68 different species of molluscs, brachiopods, crustaceans and echinoderms (including relatives of a modern brittle star, *Ophiomyces frutectosus*, pictured) that lived more than 1,000 metres underwater around 190 million years ago. By comparing the fossils with shallow-living species from the same period, the team found that the deeper species tended to stay and diversify in deep waters, whereas shallow species were more likely to move to greater depths.

Some of the deep-sea species examined are the oldest known representatives of their respective families, implying that they might have originated and evolved in deep water, rather than migrating there from shallower seas as previously thought. The deep ocean could be a stable refuge for marine species, the team says.

Proc. R. Soc. B. 281, **20132624 (2014)**

ARCHAEOLOGY

Did Neanderthals bury their dead?

The remains of a Neanderthal in France may not have been buried ceremonially, as archaeologists had suggested.

A previous analysis of a nearly complete Neanderthal skeleton, found in a cave at La Chapelle-aux-Saints, concluded that the burial was intentional, noting that the depression looked dug-out and that the remains were well preserved.

Harold Dibble at the University of Pennsylvania in Philadelphia and his colleagues now question this evidence. They found that the hole containing the skeleton (skull **pictured**) is much larger than would have been needed to hold a body. The hollow is also similar to brown-bear hibernation nests and to a second, smaller depression in the cave that holds bison remains. The researchers say that natural differences in weathering may explain why the Neanderthal remains in the cave are better preserved than those of other animals.

J. Archaeol. Sci. **http://doi.org/svx (2014)**

NANOTECHNOLOGY

Nanotubes form a complex circuit

Physicists have devised a way to use carbon nanotubes to build circuits that are more complex than previous attempts.

Highly conductive carbon nanotubes are a promising material to replace silicon transistors in integrated circuits. But when grown on a chip, not all nanotubes are semiconducting and their properties vary too much to make high-quality circuits. To get around this, Lian-Mao Peng, Zhiyong Zhang and their colleagues at Peking University in China made circuits out of smaller units, each made up of four pairs of transistors built on two nanotubes with different properties. The authors used these modules to build an 8-bit data-transfer system,

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