

#CHEMMONTHLY OCTOBER 2019



COPERNICIUM
Cn
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SIMULATIONS SHOW COPERNICIUM BEHAVES LIKE A LIQUID

New calculations show that copernicium is more like a noble gas than a metal. Relativistic effects mean that it is a highly volatile 'noble liquid' which melts at 10 °C and boils at 66 °C. It provides further evidence for the breakdown of periodicity for superheavy elements.



LITHIUM-ION BATTERIES WIN 2019 CHEMISTRY NOBEL PRIZE

The 2019 Nobel Prize in chemistry was awarded to researchers who worked on the development of the lithium-ion batteries that power our phones, computers, and more. One of the winners, John B Goodenough, becomes the oldest ever Nobel Prize winner at 97.



CATALYST TRANSFORMS SINGLE-USE PLASTICS INTO LUBRICANTS

A platinum nanoparticle catalyst, supported on strontium titanate, can selectively convert single-use polyethene to lubricants for use in a range of applications. The catalyst allows the hydrogenolysis of the polyethene, and is recyclable, though may be expensive to scale up.



ELECTROCHEMICAL PROCESS REDUCES CEMENT CARBON EMISSIONS

Cement creation accounts for 8% of the world's carbon emissions. US researchers have concocted a new electrochemical method for making cement which virtually eliminates the associated emissions – though there are questions over whether it can be scaled up.



SMALL MOLECULES CLEAR HUNTINGTON'S DISEASE PROTEIN

Huntington's disease is a genetic disorder which causes aggregation of the huntingtin protein in neurons. A new study has found a number of small molecules which bind to huntingtin and help clear it from neurons. They may lead to future treatments for the disease.



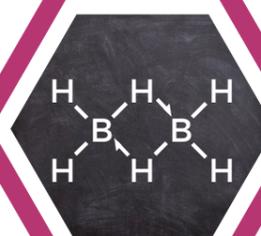
ALGORITHM PREDICTS 43 NEW FORMS OF CARBON

Using a new evolutionary algorithm method, a team of researchers have identified 43 new forms of carbon that are yet to be discovered. Some may be harder than diamond, though forming them may be challenging. The group now aim to try and calculate synthesis routes.



BATTERY-LIKE DEVICE REMOVES CARBON DIOXIDE

A new battery-like device can reversibly capture carbon dioxide in car exhaust pipes, reducing their emissions. It works at concentrations close to that of carbon dioxide in the atmosphere, so may be able to capture carbon directly from the air with further improvements.



NEW SOLUTION TO DEPICT ELECTRON-DEFICIENT COMPOUNDS

Representing electron-deficient compounds such as diborane can be difficult, with lines or dotted connections potentially causing confusion. A new solution proposes using a half-headed arrow to represent the donation of a bonding pair of electrons.

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