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NEW TYPE OF BONDING PROPOSED FOR METALLOID ELEMENTS

Ionic, covalent and metallic are taught as the three types of chemical bonding. A new type has now been proposed: metavalent bonding, between metalloid elements such as tellurium and tin. The compounds conduct electricity but also show some electron sharing.

MASSES OF TWO OF THE PERIODIC TABLE'S NEW ELEMENTS CONFIRMED

Researchers have directly measured the masses of two of the four new elements added to the periodic table in 2016, nihonium and moscovium. The masses match those that were predicted indirectly, confirming that the methods used to make these predictions are valid.

INVESTIGATION FINDS FLUORINATED COMPOUNDS IN COSMETICS

An investigation that examined moisturisers, shaving foams and foundations has found concerning levels of perfluorinated compounds, used as emulsifiers or viscosity regulators. Further work will study how well these compounds are absorbed through the skin.

FIPRONIL PESTICIDE LINKED TO HISTORICAL BEE DEATHS

New analysis suggests that the pesticide fipronil caused masses of honeybee deaths in France between 1994–1998, not neonicotinoid pesticides. The study found that fipronil accumulates to toxic levels in honeybees over time. It was banned for use on crops in 2017.

CHINESE STALAGMITES IMPROVE CARBON DATING ACCURACY

Researchers made a 54,000 year reference for carbon dating by measuring carbon-14 in stalagmites in a Chinese cave. The age of objects can be determined by measuring radioactive carbon-14; it can be calibrated from tree ring data, but this only goes back 13,000 years.

METHOD CREATES ELEMENTAL FINGERPRINT OF LIQUID SAMPLES

A new calibration method for a type of mass spectrometry allows researchers to determine the presence or absence of 71 different elements in a liquid sample. The method also shows the amounts of the elements, and was tested on beer, wine, milk, saliva and blood.

'REVERSE RACEMISATION' MAKES SINGLE MIRROR IMAGE MOLECULES

A new light-driven catalyst can convert a mix of mirror image molecules into a just one of the mirror image enantiomers - reversing a process known as racemisation. Currently, it only works for a single class of compounds, but could be useful for making medicinal drugs.

VIRUSES LISTEN IN ON BACTERIA CHEMICAL CONVERSATIONS

Phages, a type of virus, can listen in on the chemical conversations between bacteria cells. A phage could detect 3,5-dimethylpyrazin-2-ol (DPO), released in response to high bacteria cell density. When it did, it made proteins that led to bacterial cell death so it could escape.

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