

#CHEMMONTHLY NOVEMBER 2018

NEW DEFINITIONS FOR THE KILOGRAM AND THE MOLE AGREED



Metrologists have redefined four units of measurement: the kilogram, mole, ampere and kelvin. The new definitions reference fundamental constants instead of physical objects, making measurements more accurate. The new definitions come into force on May 20, 2019.

HUNDREDS OF HALOGENATED POLLUTANTS IN POLAR BEAR BLOOD



A study has found more than 200 different halogenated compounds in polar bear blood. Exposure to these pollutants can affect the bears' immune systems. The results suggest their exposure to the compounds is greater than was previously estimated.

LLAMA ANTIBODIES COULD LEAD TO HUMAN FLU TREATMENTS



Researchers have extracted engineered antibodies from llamas that were immunised against flu viruses. They are smaller than human antibodies, and could be more effective at tackling flu viruses. The antibodies were tested in mice and increased their flu survival rates.

MASS SPECTROMETRY ESTIMATES AGE OF BLOOD, URINE AND SALIVA



A new analytical method based on mass spectrometry can sample surfaces at a crime scene and detect blood, urine and saliva. The method is minimally destructive and can also compare to reference values to estimate the age of the bodily fluids detected.

HYDROGEN SULFIDE FORMS HYDROGEN BONDS AT LOW TEMPERATURE



A study has shown that hydrogen bonds form between hydrogen sulfide molecules at low temperature ($-270\text{ }^{\circ}\text{C}$). The finding disproves famous chemist Linus Pauling's belief that hydrogen sulfide molecules only have van der Waals interactions between them.

CHLOROPHYLL BYPRODUCT ALLOWS ESTIMATION OF PAST CO₂ LEVELS



Phytane, a byproduct of chlorophyll, allowed researchers to reconstruct levels of CO₂ in the atmosphere 500 million years ago, by comparing levels of carbon isotopes in phytane samples. The method may make it possible to extend the record even further into the past.

'CHEMPUTER' AUTONOMOUSLY MAKES THREE DIFFERENT DRUGS



A 'Chemputer' made by researchers can run code to carry out the synthesis of organic compounds on demand. It demonstrated this by making three drugs, including Viagra and Nyctol, without human intervention. The aim is for it to automate routine synthesis.

BIRTH OF FIRST GENE-EDITED BABIES SPARK ETHICAL CONCERNS



A Chinese researcher sparked controversy by claiming to have used CRISPR/Cas9 gene editing to create babies resistant to HIV. There are concerns about how the research was carried out and a lack of transparency, as the research has not yet been published.

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