

#CHEMMONTHLY FEBRUARY 2019



ARTIFICIAL DNA HAS EIGHT LETTERS INSTEAD OF FOUR

A new genetic code created by researchers uses eight different bases instead of the usual four. This extended genetic code can store information and be translated into RNA. This RNA behaves more like a protein, showing that life without proteins may be possible.



INJECTED NANOPARTICLES GIVE MICE INFRARED VISION

An injection of modified nanoparticles into the eyes of mice gave them the ability to see in infrared. The nanoparticles bind to light-sensing cells in the eye, absorb infrared wavelengths, then emit visible ones. Potential future uses include treating colour-blindness.



VAPING FLAVOURING CHEMICALS MAY HARM LUNG FUNCTION

Diacetyl and 2,3-pentadione, two common e-cigarette flavouring chemicals, triggered changes in human airway cells. The changes affect cells which clear dirt, mucus, and bacteria from the lungs. Manufacturers do not have to disclose chemicals used in flavourings.



MICROWAVES DECARBONISE FOSSIL FUELS & MAKE HYDROGEN

Microwave-absorbing iron nanoparticles can catalyse dehydrogenation of diesel, oil, and methane. The carbon byproduct can then be converted into useful products or stored underground. However, efficiency and deactivation of the catalyst is a problem.



HARVESTING DISSOLVED URANIUM FROM SEAWATER

The world's oceans contain 4 billion tons of dissolved uranium, but it's at such a low concentration that it's difficult to extract. A new absorbent material uses a chelating agent which grabs uranium from seawater while leaving behind interfering vanadium ions.



INGESTIBLE DEVICE INJECTS INSULIN INTO STOMACH LINING

Diabetics usually inject insulin as it's poorly absorbed and too easily broken down in the stomach. A new ingestible device injects insulin directly into the stomach lining before leaving the body harmlessly. It worked successfully in pigs and there are hopes for human trials.



SMART GLASS SWITCHES FROM LIGHT TO DARK IN A MINUTE

A new type of smart glass based on electroplating can switch from 75% transparency to 10% in one minute. The glass uses transparent electrodes to turn colourless dissolved bismuth and copper ions black when a voltage is applied. It's both cheap and durable.



BURNED ORGANIC MATTER COULD BE NEW FERTILISER SOURCE

Burned organic matter could convert ammonia pollution into fertilisers. A new study found that it adsorbed significant amounts of ammonia, and this increased sixfold when it was artificially weathered. It may play a role in the global nitrogen cycle.

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