

PHOTONICS

Nanolasers for precision imaging

Researchers have turned nanowires into tiny lasers that could one day be used in high-resolution microscopy.

The resolution of optical microscopes is normally constrained by the wavelength of light. To overcome this 'diffraction' limit, a team led by Seok Hyun Yun at Massachusetts General Hospital in Cambridge made nanowires of lead iodide perovskite that were 3–7 micrometres long and just 300–500 nanometres wide. When the team scanned the nanoparticles with a laser, they emitted light. The narrow width of the nanowires allowed their positions to be tracked with resolutions roughly five times better than the diffraction-limited resolution.

Such nanolasers could one day be placed inside cells and yield super-resolution images from deep within tissue samples, the authors say.

Phys. Rev. Lett. 117, 193902 (2016)

GEOCHEMISTRY

Plants take up more carbon

Enhanced plant growth over the past decade seems to have slowed the build-up of carbon dioxide in the atmosphere.

Despite the rise in CO₂ emissions resulting from human activity, atmospheric CO₂ levels have grown relatively little since 2002. To find out why, Trevor Keenan at Lawrence Berkeley National Laboratory in California and his colleagues used ground observations, satellite data and vegetation models to quantify changes

in CO₂ uptake and release by terrestrial plants worldwide. They found that increased photosynthesis and plant 'greening' have boosted the amount of carbon stored on land. Reduced plant respiration due to the recent slowdown in the rate of global warming also seems to have increased this carbon sink.

However, terrestrial carbon stocks will not offset the accumulation of heat-trapping gases in the atmosphere if emissions continue to grow, the scientists caution.

Nature Commun. 7, 13428 (2016)

CANCER IMMUNOTHERAPY

Gene-edited cells fight cancer

Immune cells engineered to target cancer could provide an off-the-shelf therapy if results in mice can be replicated in people.

Previous work has shown that engineered T cells called CAR-T cells can be taken from a patient and modified to kill some types of tumour, but the supply can be limited. To make a more reliable, universal source of donor cells, Carl

June, Yangbing Zhao and their colleagues at the University of Pennsylvania in Philadelphia used the genome-editing tool CRISPR-Cas9 to tweak human CAR-T cells. They disabled two proteins that can trigger immune rejection of donor T cells, resulting in a reduced reaction from the immune system when the cells were used in mice.

The team also disrupted a protein called PD-1, which normally holds immune responses in check. The cells slowed the growth of human tumours implanted into mice.



ANIMAL BEHAVIOUR

Plastic smells good to marine birds

Marine animals often mistake plastic pollution for food, possibly because of its smell.

Marine grazers such as krill consume microscopic organisms called phytoplankton, which release dimethyl sulfide (DMS). Some of krill's seabird predators, such as petrels and shearwaters, sniff out this chemical to find the grazers. Matthew Savoca and Gabrielle Nevitt at the University of California, Davis, and their colleagues attached beads of the three most

common types of ocean plastic to buoys off the coast of California for three weeks. They detected DMS emitted from every seawater-exposed sample, but not from unexposed plastic.

Data from other studies showed that predators that were most responsive to DMS also ingested the most plastic, which can poison animals and block their digestive systems (pictured is an albatross with plastic in its stomach).

Sci. Adv. 2, e1600395 (2016)