

October Science News Recap

ICFO's summary of news highlights of the scientific discoveries and stories from the month of October 2026.

November 03, 2026

October was packed with different scientific discoveries, results and findings that have sparked different stories to share. We've gathered the most important updates to keep you in the know. Whether you missed a few of them or just want a quick recap, our summary of October's top scientific news has you covered. Dive in and catch up on everything that happened this month.

News 1

Solar cells gain efficiency by emitting light in fewer directions

Boltzmann losses arise because materials that absorb light can also emit light. The problem with solar cells lies in how this occurs. Because the Sun appears very small in the sky, sunlight reaches the cell within a narrow cone of directions. The solar cell, by contrast, emits in all directions, over a broad cone that practically covers the full hemisphere above it. This mismatch between the narrow cone of incoming light and the broad cone of emitted light

translates into a reduction in the useful work that can be extracted from the device.
ICFO researchers have increased the power conversion efficiency of organic solar cells by restricting the angles at which they emit light. The underlying principle is not specific to organic materials and is, in principle, applicable across photovoltaic technologies. The strategy, presented in Energy & Environmental Science, therefore offers a promising path to surpass the standard theoretical efficiency limit for single-junction solar cells.
Date: October 5, 2026
Topic: Solar cells.
ICFO Researchers: Dr. Francisco Bernal Texca, Chiara Cortese, Dr. Mariia Kramarenko, and Dr. Quan Liu, led by ICFO and UPC Professor Jordi Martorell.
Read more ...

News 2:
Michael Krieg: i¿½I wish for more bold science at the fascinating intersection between lig t and biologyi¿½
A curious question about how algae find and react to light has become a Nobel-winning tool for controlling the brain. Prof. at ICFO Michael Krieg explains how optogenetics is set to enable new advances in photonics and, additionally, help carry these advances from the lab to patients, starting with restoring sight.
Date: October 9, 2026
Topic: Optogenetics.
ICFO Researchers: Prof. Michael Krieg.
Read more...

News 3:
Water is not just a liquid: The right water arrangement favors CO2 conversion into useful chemicals
Water is a key ingredient in technologies to make sustainable fuels such as CO2 electrolysis, but so far was viewed just as a passive element. ICFO and ICIQ researchers have now shown in a Nature Catalysis study that interfacial water plays an active role in CO2 reduction, as it regulates the access of CO2 to the reactive interface for the subsequent production of multicarbon chemicals.
Date: October 15, 2026
Topic: CO2 electroreduction
ICFO researchers: Dr. Anku Guha, Dr. Barbara Polesso, Prathama Haldar, Ranit Ram, Adrian Pinilla-Sanchez, Dr. Indrajit Mondal, and David Kernan, led by Prof. at ICFO F. Pelayo Garcia de Arquer.
Read more...

News 4:

Controlling shell growth on quantum dots yields more efficient SWIR LEDs

Short-wave infrared (SWIR) light-emitting diodes (LEDs), which emit at wavelengths of roughly 1,000-2,500 nm, could unlock applications that are beyond the reach of conventional visible or near-infrared LEDs, including machine vision, biological imaging and optical communication.

ICFO researchers have now achieved a record light-emission efficiency for SWIR quantum dots by understanding and controlling how a shell grows around the dot's core. In a study published in Nature Communications, they have used these dots to build LEDs, which set a new state of the art for heavy-metal-free SWIR devices.

Date: October 19, 2026

Topic: Quantum dots.

ICFO researchers: Dr. Taewan Kim, Dr. Manuela De Franco, Dr. Miguel Dosil, Dr. Jae Taek Oh, Dr. Rajesh Bera, Marta Martos Valverde, and Dr. Gaurav Kumar, led by ICREA Prof. Gerasimos Konstantatos.

Read more...

News 5:

Helping catalysts breathe: Accelerating bubble release improves water electrolysis performance

Hydrogen, if efficiently produced through water electrolysis, could become a major clean energy carrier for decarbonizing our society. One often overlooked challenge in water electrolysis, though, is the formation of oxygen bubbles at the anode, particularly under acidic conditions and at high current densities. Bubble build up blocks active sites, restricting water access to the catalyst surface and, consequently, degrading overall performance.

Now, ICFO researchers and collaborators have engineered the catalyst interface to tackle oxygen bubble accumulation. By engineering oxygen vacancies (a spot in the material where an oxygen atom is missing), interfacial water is better adsorbed at the catalyst surface. This promotes oxygen bubble detachment and suppresses the instabilities these bubbles induce, thereby improving electrochemical performance. The strategy, published in ACS Catalysis, offers a path toward more efficient green hydrogen generation.

Date: October 22, 2026

Topic: Water electrolysis

ICFO researchers: Aparna Das, Dr. Viktoria Golovanova, Dr. Anku Guha, Adrian Pinilla Sanchez, Tengyu Chen, Dr. Lu Xia, Ranit Ram, Andrea Rogolino, Dr. Kaiwen Wang, led by Prof. F. Pelayo Garcia de Arquer.

Read more...

News 6:

Thinner silver films, stronger nonlinear response

Researchers at the University of Vienna, the University of the Basque Country, and ICFO have presented a novel strategy for enhancing nonlinear optical responses in two studies, one published in Nature Communications and the other in Advanced Materials. The researchers use atomically thin silver films rather than bulk materials, and pattern these films laterally for an additional enhancement. This is attractive for highly compact nonlinear optical devices and future on-chip photonic systems.

Date: October 29, 2026

Topic: Nonlinear optics.

ICFO researchers: Dr. Saad Abdullah, Dr. Andrew P. Weber, Dr. Alvaro Rodriguez Echarri, Dr. Fadil Iyikanat, and Dr. Vahagn Mkhitaryan, led by ICREA Prof. F. Javier Garcia de Abajo.

Read more...