



## May Science News Recap

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

June 03, 2026

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May 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 May's top scientific news has you covered. Dive in and catch up on everything that happened this month.

### News 1

#### **New InSb quantum dot synthesis to detect infrared light**

Quantum dots - tiny semiconductors that behave like a single atom - can absorb and emit light at different wavelengths depending on their size (the larger the dots, the longer the wavelength). Indium antimonide (InSb) quantum dots offer multiple advantages. For example, they can operate in the short-wave infrared (SWIR) range, which can generate images through smoke and fog, as well as at night and from a remote location, while

maintaining eye safety. Until now, however, the synthesis method produced dots that were too small and had a very broad size distribution, so they could not absorb SWIR light. Researchers at ICFO have developed a new synthesis method that produces large, homogeneous quantum dots that are therefore capable of absorbing SWIR light. Using them, the researchers have fabricated efficient photodetectors for this type of light, which has applications in autonomous vehicles and fire prevention. The results have been published in Nature Communications.

Date: May 6, 2026

Topic: Quantum dots.

ICFO Researchers: Dr. Lucheng Peng, Miguel Dosil, Dr. Debranjana Mandal, Hao Wu and Aditya Malla, led by ICREA Prof. Gerasimos Kontantatos.

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#### **News 2:**

##### **The dual role of anions in acidic CO<sub>2</sub> conversion**

Traditionally, the role played by anions (negatively charged particles) in the conversion of carbon dioxide (CO<sub>2</sub>) into useful chemicals in an acidic environment has been traditionally underexplored. Recent evidence, however, suggests that anions are not passive species, but can actively modulate the conversion performance.

In a JACS publication, ICFO researchers have expanded this knowledge by unequivocally demonstrating that anions do influence CO<sub>2</sub> electroreduction. Specifically, they hinder the production of desired compounds at low electric currents, but progressively stabilize the key intermediate products for their formation as the current increases.

Date: May 11, 2026

Topic: CO<sub>2</sub> electroreduction.

ICFO Researchers: Adrian Pinilla-Sanchez, Dr. Barbara Polesso, Prathama Haldar, Ranit Ram, Dr. Anku Guha, led by Prof. F. Pelayo Garcia de Arquer.

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#### **News 3:**

##### **Thinner gold films, better biosensors**

What role does the thickness of the metal films in biosensors play? That is the largely unexplored question that ICFO researchers have been trying to answer.

Now, in an APL Materials article, they have built biosensors made of ultrathin gold films and have shown that the sensor's response becomes stronger and faster as the films become thinner. By incorporating a self-assembled monolayer (SAM) of thiol-based molecules upon the ultrathin gold films, the biosensor could specifically detect streptavidin, demonstrating its ability for selective sensing.

Date: May 18, 2026

Topic: Biosensors

ICFO researchers: Dr. Javier Arres Chillón, Dr. Daniel Martínez Cercos, Dr. Ewelina Wajs, led by ICREA Prof. Valerio Pruneri.

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#### News 4:

##### **What do magnetic bacteria do to relax?**

*Magnetospirillum gryphiswaldense* is a special kind of bacterium. Inside its body, it grows magnetic nanocrystals, organized in a linear chain to form a tiny but powerful bar magnet. Now ICFO researchers report an optically pumped magnetometer (a magnetic field sensor) that can precisely measure how the bacteria align to an applied field, and how they lose that alignment (how they relax) when the field is turned off. Using the precision sensor, the team saw that the relaxation is nearly but not exactly exponential, a result that was predicted by theory but had never been observed. These subtle differences likely indicate that the individual bacteria within the population have different relaxation rates, rather than them being perfectly homogeneous. The results are published in *EPJ Quantum Technology*.

Date: May 26, 2026

Topic: Biosensors.

ICFO researchers: Maria Hernández Ruiz, Dr. Christopher Kiehl and Dr. Vito Giovanni Lucivero, led by ICREA Prof. Morgan W. Mitchell.

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#### News 5:

##### **A mechanical qubit for long-coherence quantum computing**

Quantum computers tackle challenges that are simply out of reach of classical systems by harnessing quantum phenomena such as superposition and entanglement. Yet one of the main barriers to practical quantum computing remains a stubborn one: today's qubits lose their fragile quantum state almost as quickly as it forms. This short coherence time makes quantum information difficult to store, process, and scale up reliably.

The project MechQubit will explore a qubit platform based on nanomechanical systems, in which quantum information is encoded in the vibrational motion of nanoscale devices.

Mechanical systems of this kind offer unique advantages, including higher coherence, strong coupling to multiple physical degrees of freedom, and compatibility with hybrid quantum architectures.

Date: May 27, 2026

Topic: Mechanical qubits

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