



Science in School

Dr. Nathalie Wössner
Executive Editor

Supporting STEM teachers in inspiring their students and fostering positive attitudes towards the science that shapes our lives.

EIROForum

European Intergovernmental Research Organisation forum

- Facilitating interactions with EU organs, national governments, industry
- Stimulating transfer of technology
- cooperating on large-scale outreach activities to a wide audience
- promoting inspiring science teaching



EMBL

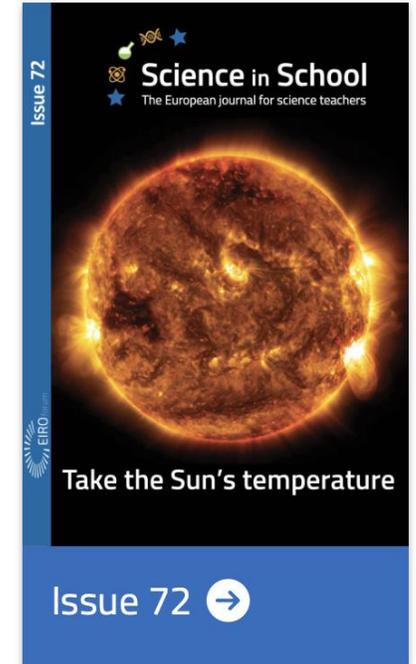
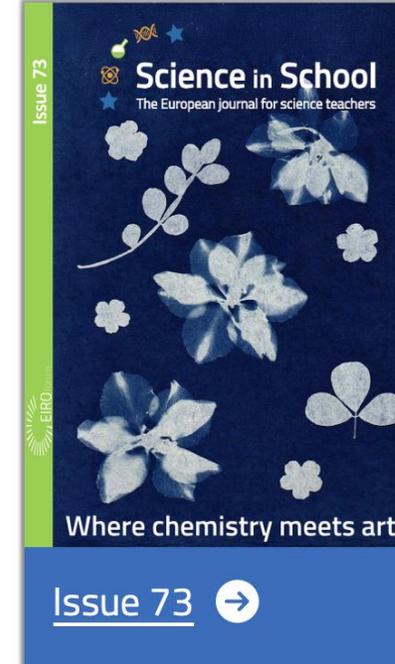
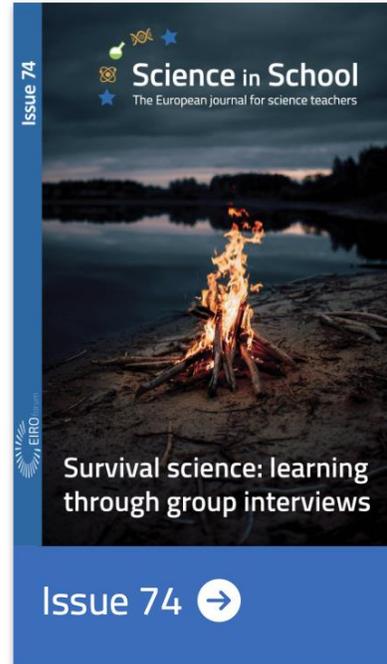


9/23/2025

- **Free & Accessible**
- Publication **online**
- **5** Issues per year
- Ca. **1000** articles
- **32** languages

- **Across disciplines**

Astronomy, Biology, Careers in STEM, Chemistry, Coding, Engineering, Health, Mathematics, Physics, Science and society, Sustainability...



What's featured?



Understand →

Explore cutting-edge science and real-world applications.



Inspire →

Discover projects, people, and resources.



Teach →

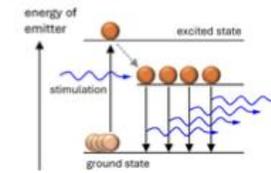
Find ideas and teaching materials for classroom activities.

UNDERSTAND

- 340 articles
- Current research
- Underlying principles
- New technologies
- Real-life applications

rectional and bright beam of light that is also pure in colour (monochromatic).

What makes a laser different from a light bulb is that atoms inside the laser emit light in a synchronized way, facilitated by the process called 'stimulated emission'. In this process, when an atom is already excited, it can be triggered by a passing photon to release its own photon that looks exactly the same (same colour, direction, and timing). This causes more atoms to do the same, creating a strong, focused beam of light. An interactive simulation of stimulated emission and a laser is a fun way to explore this important phenomenon.^[1]



Top: A photograph of different lasers showing directional and bright beams of pure colours. Bottom: A schematic of light amplification through synchronized stimulated emission. Images: Left: 彭海洪/Wikimedia Commons, CC BY-2.0. Right: Courtesy of the author, based on *Physics World*

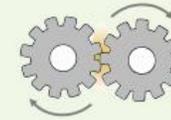
The synchronization of emitters as found in a laser is part of a broader concept known as collective phenomena, and the unusual properties that result from it are called emergent properties. Emergent properties are novel behaviours or patterns that arise from interactions between multiple components, for example, the brightness, directionality, and colour purity of the laser as compared to a light bulb. For such properties to occur, the components must be connected (coupled) and able to respond to changes in each other (feedback). Because emergent properties result from complex interactions, they are difficult to predict from the behaviour of individual parts.

<https://scienceinschool.org/article/2025/collective-phenomena/>

Concepts of coupling and feedback between elements which give rise to emergent properties

Coupling:

Coupling is a connection between objects or processes that enables a change in one object or process to be transmitted to another one. Two locked gears are an example of a system with mechanical coupling. In light emitters, the coupling between them occurs through electromagnetic interactions and fields.



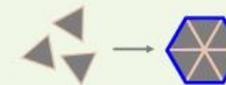
Feedback:

Feedback occurs when changes in one object or process influence another one. An example is acoustic feedback: an irritating loud sound heard when a microphone is placed next to a speaker and both are connected through an amplifier. In light emitters, feedback occurs when a photon from one emitter triggers stimulated emission from another.



Emergent property:

A property or a phenomenon that is missing in a single object or process, but arises when many objects interact together. In the illustration, a single triangle is a three-sided shape. But when six triangles are arranged together, they form a hexagon, a new shape with six sides that wasn't present in any individual triangle.



Images courtesy of the author

INSPIRE

- 306 articles
- Inspiring methods
- High-impact news
- Programs for schools
- People in science
- Diversity in Science



Introducing students to the beauty of biomolecules

Deepti Gupta, David Armstrong

The PDB Art project brings together art and science in the classroom, with school students exploring the wonderful world of molecular structures through the medium of art.

The [PDB Art project](#) is run by [Protein Data Bank in Europe \(PDBe\)](#), which is jointly responsible for managing the Protein Data Bank (PDB) archive, a database containing 3D atomic structures for more than 175 000 biomolecules. These structures are crucial for scientists looking for answers to important biological and biomedical questions, for example, relating to disease, metabolism, and developing new drugs.

Bringing art and science together

Through the PDB Art project, students are introduced to the importance of biomolecules such as proteins and DNA, and how these can be visualised in 3D. The aim is to spark their curiosity and inspire them to learn more about a molecule

of interest, for example a protein linked to a disease. After learning more about the protein, they are encouraged to create artworks that illustrate the molecule and explain 'why it matters'. These artworks are then shared widely by PDBe in the public and scientific community through exhibitions and other media, such as a [yearly calendar](#).

Timeline

September: Start of PDB Art project, contact PDBe
October–February: Classroom learning with PDBe support
March: Artwork submission
July, August: PDB Art exhibition

TEACH

- **314** articles
- Concrete activities for the classroom
- Ready to use incl. list of materials, procedures worksheets, etc.



Build your own virtual accelerator

Carsten P Welsch

Build your own virtual particle accelerator with the aid of the acceleratAR app and gain a hands-on, immersive understanding of how these machines work.

Introduction

In Star Wars, viewers were first introduced to droids when R2-D2 and C-3PO crash landed on Tatooine carrying an important message for Obi-Wan Kenobi. Their clear personalities and character have meant that droids have remained popular ever since – including new addition BB-8 in the recent sequels.

We cannot match the level of sophistication of R2-D2 or BB-8, but we do use machine learning to optimize the control of particle accelerators, artificial intelligence for data analysis from high-energy particle collisions, and augmented reality to understand challenging physics and engineering concepts.

Particle accelerators are unique tools for scientific discoveries; they also find application in many other areas, such as cancer treatment, energy production, or as airport-security scanners.

A stormtrooper using acceleratAR, the virtual accelerator app.
The Cockcroft Institute



Who do we reach?



Active users by Country ID



Up to **30'000 views** for the most popular articles in 2025

Colour, chlorophyll and chromatography
Build your own particle accelerator
Quick quantitative chemistry – the microscale way

Who do we reach?



9'000
5 per year



3'800
3-4 posts
per week



10'000
3-4 posts
per week



3'650
2 posts per
week

August 2025

What's in the future?

- Involve national/regional organisations promoting STEAM education
- Increase our reach
- Get more articles translated

How can you contribute?

- Encourage **contributions** from your country
- Encourage **article reviews**
- Help **translating** articles
- Introduce **local teachers** to Science in School
- **Talk about us!**

Thanks for your attention!