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18 The beginnings of the biobattery

The energy supply of the future has a storage problem. In order to store excess power from wind turbines and solar power systems for times when there is not enough electricity available, high-power batteries and capacitors are required that should be made from the least toxic, most sustainable materials possible. Scientists at the Max Planck Institute of Colloids and Interfaces are working to find a solution.

26 Solar fire in the stellarator

Harnessing solar fire on Earth is something that humans have dreamed of for many years. In fact, nuclear fusion in a reactor on Earth would provide an entirely new source of energy. At the Wendelstein 7-X facility, researchers at the Max Planck Institute for Plasma Physics are exploring one approach to this form of energy generation.

34 A greenhouse gas to fuel the chemical industry

Carbon dioxide, of all substances, could help the chemical industry reduce its climate footprint. Using energy from renewable sources, it could be incorporated into the building blocks of plastics and other products – if suitable catalysts and production processes can be found. This is what a team from the Max Planck Institute for Chemical Energy Conversion is hoping to achieve.

ON THE COVER Rays of light for the energy transition: in future, regenerative energy sources are planned as a replacement for coal, gas and mineral oil. Here, nuclear fusion could offer an alternative to power from wind turbines and solar power systems. The tracer of an electron beam in a plasma shows that a magnetic field confines its charged particles as needed, which melt in a fusion power plant and would release large quantities of energy. While fundamental physical and technical questions remain unanswered when it comes to nuclear fusion, to date there are no suitable energy storage facilities for expanding wind and solar power. Batteries from renewable materials or chemical products produced from carbon dioxide could help here.

10 Designs: When the boundaries between human and machine become blurred, new ethics are required.

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Digitization is literally drawing closer to our everyday lives. For a long time, the issue of ethics has been on the table that keeps the use of artificial intelligence within reasonable limits. Our author advocates reviving humanistic ideals for the digital world.

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Leghold traps, limed rods, pit traps - insectivorous plants have come up with unusual strategies to obtain additional nutrients. At the Max Planck Institute for Chemical Ecology, researchers are investigating how pitcher plants from Southeast Asia entrap and digest their victims.

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In the future, it will be more and more common for computers to make decisions about human beings - whether they are granting loans or assessing applicants. However, automated systems occasionally discriminate against individual groups of people. Scientists at the Max Planck Institute for Intelligent Systems hope to change this situation.

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