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KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH

Innovation Brief

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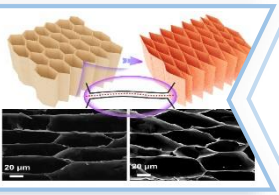
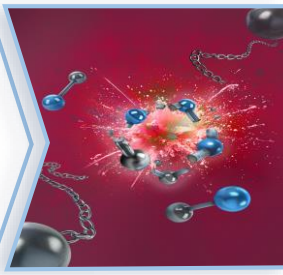


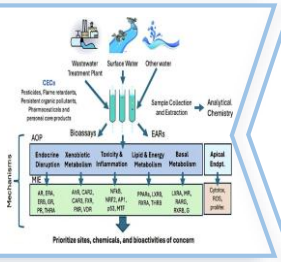
New fabrication strategy enhances graphene aerogel sensitivity & durability for human-machine interfaces

Researchers recently introduced a new fabrication method for synthesizing a durable, hyperelastic, graphene oxide-based aerogel metamaterial with a remarkable sensitivity to human touch. Further studies aim to use the material in prosthetic devices, as well as sensors in wind energy.

Triazenolysis: A new chemical process to produce raw materials



In a paper published in *Nature Chemistry*, researchers detail a newly developed chemical process to produce raw materials for the manufacture of polymers, pharmaceuticals, and agricultural compounds. Called triazenolysis, the new process converts alkenes—common organic compounds such as petroleum—into multifunctional amines useful in various research and industrial applications. Triazenolysis produces carbon-nitrogen bonds by cleaving carbon-carbon bonds in olefins.

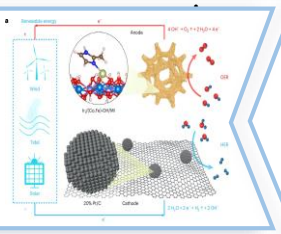


Alternate stream water-testing method detects emerging contaminants

"Contaminants of emerging concern" in streams and lakes pose serious threats to human health and aquatic organisms. A team led by researchers at Penn State recently demonstrated the accuracy and utility of a new method to find even very low levels of these substances in surface waters. Their new method employs cell-based bioassays that measure the concentration or potency of substances by their effect on living cells. It detected potential ecological hazards in water samples that conventional tests did not.

Superior photosynthesis abilities of some plants could hold key to climate-resilient crops

Around 30 million years ago, while most plants continued using an old form of photosynthesis known as C3, others developed a newer and more efficient version called C4. Now for the first time ever, Salk Institute scientists and their collaborators discovered a key step in C4 plants' evolution to become so efficient at photosynthesizing—and how we could use this information to make crops like rice, wheat, and soybeans more productive and resilient against our warming climate.



New electrochemical water splitting method offers fast, sustainable method for hydrogen production

A German–Chinese research team has developed a new method for the electrochemical splitting of water that not only accelerates the production of hydrogen for technology and industry but also makes it more sustainable. Their approach significantly increases OER activity, exhibits an ultra-low overpotential, reduces use of noble metals, and increases the stability of the acceleration reaction.

Climate-friendly farming: Scientists find feeding grazing cattle seaweed cuts methane emissions by almost 40%

A new study by researchers at the University of California, Davis found that feeding grazing beef cattle a seaweed supplement in pellet form reduced methane emissions by almost 40% without affecting their health or weight. The study suggests a way to make cattle grazing better for the environment and fight climate change with supplements suited to grazing animals' eating habits.