Scientific newsletter

FALL 2024

At the front page of IRIG

Cobalt catalyst and sunlight to produce green fuel

A cobalt-based catalyst adsorbed onto carbon nanotubes converts 90% of CO_2 into CO. Integrated into a photoelectrochemical dye cell it can produce synthetic fuel using solar energy.

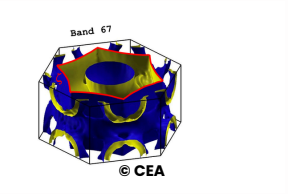
Murielle Chavarot-Kerlidou | LCBM | *JACS* 2024

On IRIG website

At the heart of the electronic structure of a superconductor

To better understand the fundamental physical properties in the superconducting material CsV_3Sb_5 researchers at IRIG used extreme temperature and pressure conditions to determine the original electronic structure without any deformation by magnetoresistance.

Georg Knebel | Pheliqs | *PNAS* 2024



On IRIG website

Large-scale characterization of protein modifications

Proteomics techniques are usefull to study chemical modifications that can disrupt protein activities, or more generally modify the physiological and pathological functioning of biological systems.

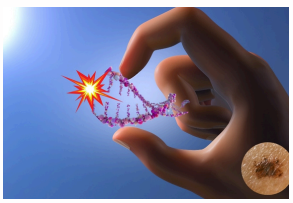
Yohann Couté | BGE | *Frontiers Microbiology* 2024

On IRIG website

Is blue light a threat to our skin?

In collaboration with Pierre Fabre Dermo-Cosmétique laboratories researchers at IRIG are studying the genotoxic effect of blue light and its possible involvement in the development of skin cancers.

Thierry Douki | SyMMES | *Photochem Photobiol* 2024



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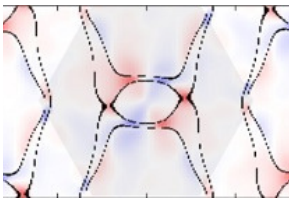


Altermagnetism for the benefit of spintronics

The manganese-silicon-based material Mn_5Si_3 is altermagnetic. Recently discovered this new property would enable to produce more efficient faster and denser spintronic devices.

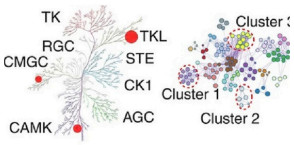
Vincent Baltz | SPINTEC| *Nature Communications* 2024

On IRIG website

The Rendu-Osler disease gives ways

The signalling pathways are modulated by large-scale phospho-proteomic analysis. The results are leading to a better understanding of the molecular mechanisms at the origin of the disease and to proposals for new therapeutic approaches.

Sabine Bailly | Biosanté | *Cell Communication and Signaling* 2024



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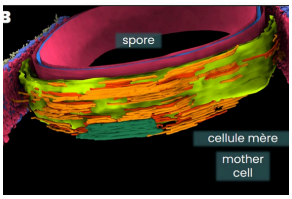

The bacterial spore assembles its armor

Bacterial spores are dormant cells that manage to resist various stresses (antibiotics, disinfectants, irradiation, high temperatures) thanks to their macromolecular assemblies.

Cécile Morlot | IBS | *Nature Communications* 2024

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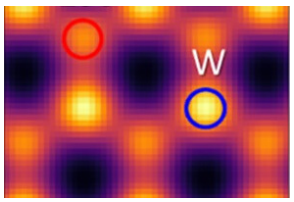
Negative charge in doped 2D layer detected by 4D-STEM

A new analytical method in scanning transmission electron microscopy enables analysis of vanadium-doped WSe_2. Combined with *ab initio*-based simulations this approach enabled a detailed quantitative analysis of the local electrostatic potential from which the negative charge induced by a single vanadium dopant atom was detected

Hanako Okuno | MEM | *ACS Nano* 2024



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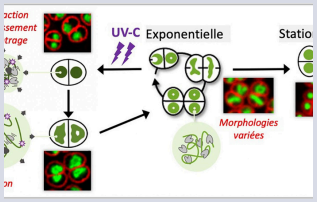
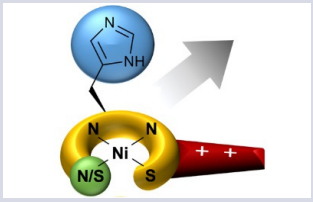
Other scientific news from laboratories



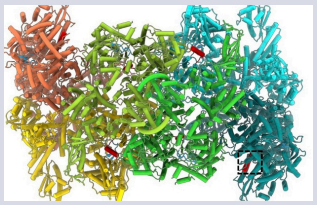
Nucleoid remodeling and changes in HU protein dynamics in *Deinococcus radiodurans* under stress conditions

On IBS website



To design outstanding peptide mimics of nickel superoxide dismutase, be positive!

On SYMMES website



Full-length structure of Hantaan virus polymerase in 3 distinct oligomeric states

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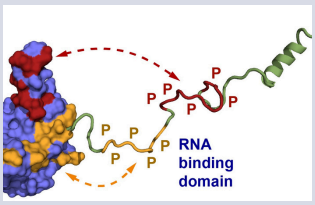
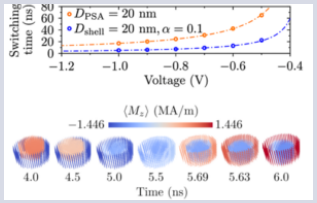


A hyperphosphorylation-dependent conformational switch in the disordered domain of SARS-CoV-2 nucleocapsid protein inhibits RNA binding

On IBS website



A dipolar core-shell perpendicular shape anisotropy memory cell.

On SPINTEC website

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