

SWISSFEL - REPAIRING GENETIC DAMAGE WITH SUNLIGHT



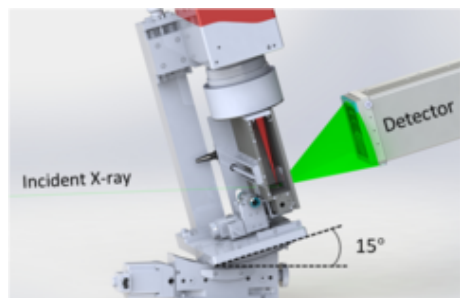
DNA damage to the genetic material DNA drives cancer, ageing, and cell death. Therefore, DNA repair is crucial for all organisms, and a deeper understanding of this basic function helps us better comprehend how life around us survives and thrives. An international team of researchers has now revealed how the enzyme photolyase efficiently channels the energy of sunlight into DNA repair chemistry.

Read more: <https://www.psi.ch/en/media/our-research/repairing-genetic-damage-with-sunlight>

Nina-Eleni Christou et al., Science, 01.12.2023, <https://www.science.org/doi/10.1126/science.adj4270>

Manuel Maestre-Reyna et al., Science, 01.12.2023,
<https://www.science.org/doi/10.1126/science.add7795>

SLS — MICROSTRUCTURAL CONTROL OF ADDITIVELY MANUFACTURED Ti-6Al-4V



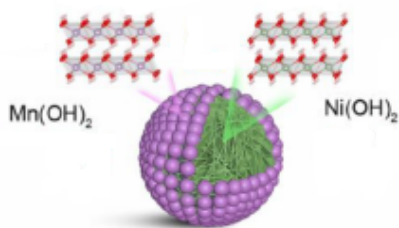
In-situ selective heat treatment of an additive manufactured Ti-6Al-4V alloy effectively induces local microstructural changes and activates the solid-state phase transformation of the β phase within a short time frame. This opens doors for creating intricate 3D architected or composite-like microstructures.

Read more: <https://www.psi.ch/en/smam/scientific-highlights/in-situ-selective-laser-heat-treatment-for-microstructural-control-of>

Reza Esmaeilzadeh et al., Additive Manufacturing 78 (2023) 103882.

<https://doi.org/10.1016/j.addma.2023.103882>

SLS — "CORE-SHELL" CATHODES FOR HIGH PERFORMANCE LI-ION BATTERIES



Li-rich or Ni-rich layered oxides are considered ideal cathode materials for high-energy Li-ion batteries (LIBs) owing to their high capacity ($> 200 \text{ mAh g}^{-1}$) and low cost. However, both are suffering from severe structural instability upon high-voltage cycling ($> 4.5 \text{ V}$). In this work, "Li-rich Ni-rich" $\text{Li}_{1.08}\text{Ni}_{0.9}\text{Mn}_{0.1}\text{O}_2$ oxides with core-shell architecture are designed and synthesized to improve their cyclability at these high-voltages. These oxides are determined to be composed of

a less reactive "Li-rich Mn-rich" shell and a high-capacity "Li-rich Ni-rich" core.

Read more: <https://www.psi.ch/en/sls/ms/scientific-highlights/core-shell-cathodes-for-high-performance-li-ion-batteris>

Z. Jing et al., Energy Storage Materials 2023, 59, 102775

<https://doi.org/10.1016/j.ensm.2023.102775>