PAUL SCHERRER INSTITUT

PSI facilities newsletter

https://www.psi.ch/science/facility-newsletter
https://synchrotron-analysis.ch/

Industrial Use of the PSI Photon Science Facilities

SLS Techno Trans AG provides industry customers with straightforward access to synchrotron analysis at the Swiss Light Source (SLS), high performance cleanrooms, and SwissFEL, all located at the Paul Scherrer Institute, Switzerland. These world class research facilities are regularly used by industry to solve problems in materials science, medicine, food science, energy supply and the environment. An impressive series of application examples that include typical SLS experiments to solve industrial and social issues are published on our website: https://synchrotron-analysis.ch/application-examples.

Below we give you a glance on current topics, which can also be found in detail on our page under "Featured Projects".

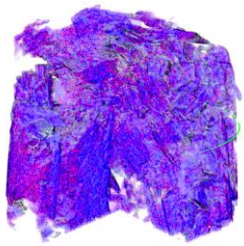
ALPACA NANOBODIES NEUTRALISE COVID-19 SPIKE PROTEIN

Synchrotron analysis confirms tight binding of nanobodies at the molecular level. Researchers at the Max Planck Institute for Max Planck Institute for Biophysical Chemistry have developed a new approach using nanobodies (also known as VHH antibodies) that neutralize SARS-CoV-2 before it can enter and infect cells. Macromolecular crystallography beamlines at the Swiss Light Source were used to confirm the tight binding of the nanobodies to the spike protein of the SARS-CoV-2 virus.

Read the full story: https://synchrotron-analysis.ch/application-examples/featured-projects/142-alpaca-nanobodies-neutralise-covid-19-spike-protein

Güttler T et al., EMBO J (2021)40:e107985 / https://doi.org/10.15252/embj.2021107985

HOW CATALYSTS AGE

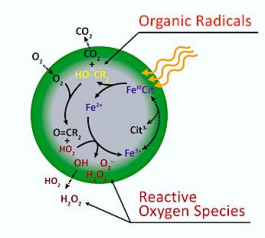


Clariant AG have used a novel combination of spectroscopy and tomography to non-destructively image the interior of pristine and used catalyst pellets with nanometre resolution. During reactor operation, the catalyst undergoes a series of structural and compositional changes that culminate in a gradual loss of catalyst productivity. Working with tomography experts at the Swiss Light source, high-resolution 3-D reconstructions of new and used pellets could reveal the reasons for decay of catalyst activity.

Read the full story: https://synchrotron-analysis.ch/application-examples/featured-projects/143-how-catalysts-age

Z. Gao et al., Science Advances 2021; 7:eabf6971/ https://www.science.org/doi/10.1126/sciadv.abf6971

MAPPING SUNLIGHT INDUCED CHEMICAL REACTIONS IN AEROSOL PARTICLES



The Swiss Light Source is a unique location for discovering groundbreaking physics and chemistry happening in the atmosphere. As aerosol particles have such a wide impact on our environment and health, it is essential to investigate their size, composition, distribution, and relevant physical and chemical processes.

Read the full story: https://synchrotron-analysis.ch/application-examples/featured-projects/141-mapping-sunlight-induced-chemical-reactions-in-aerosol-particles

Alpert PA et al., Nature Communications 12, 1769 (2021) / https://doi.org/10.1038/s41467-021-21913-x