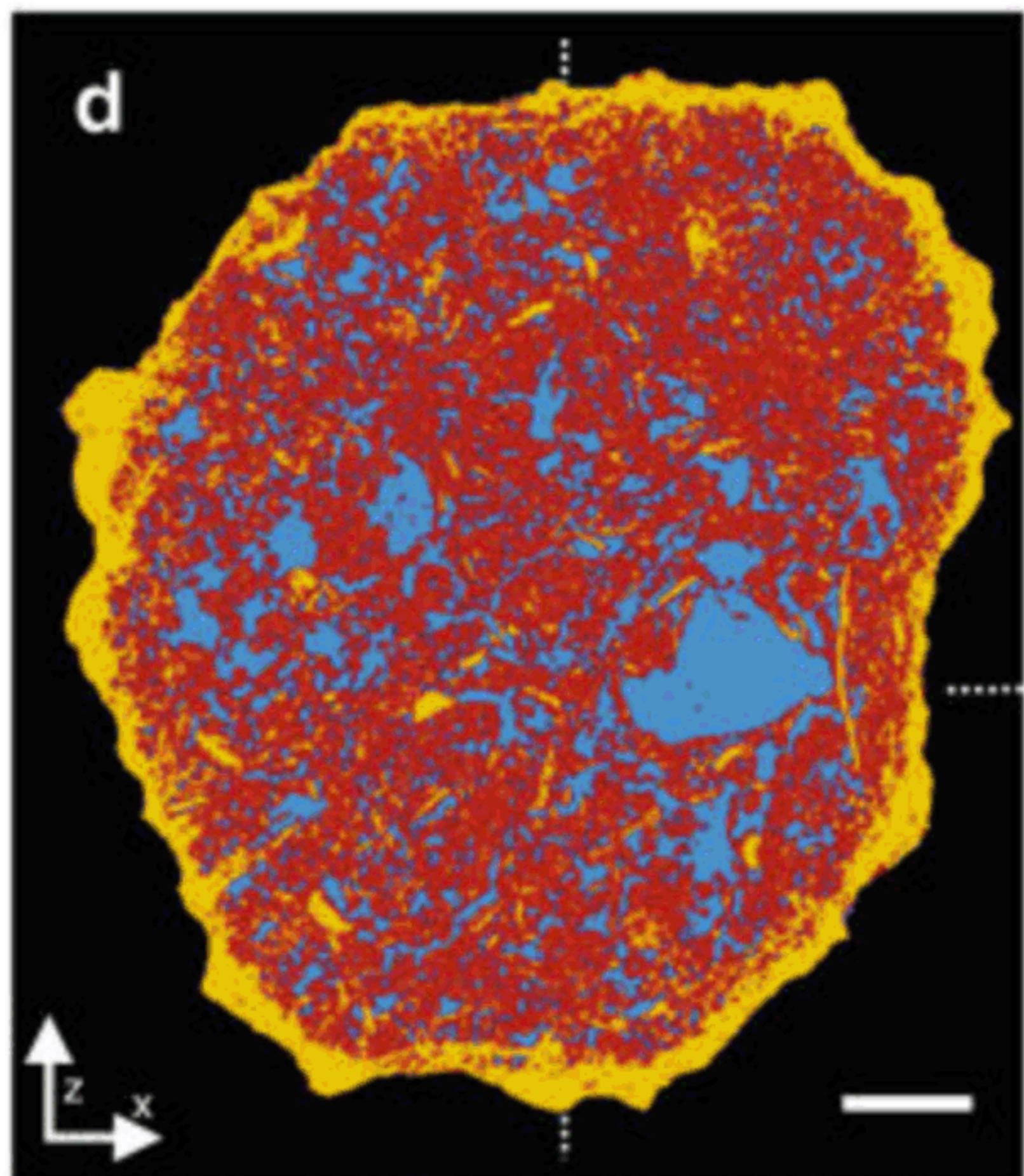


Three Dimensional View of Structural Changes caused by deactivation of Fluid Catalytic Cracking Catalysts

hli J. et al, *Nature Communications* 8, 809 (2017), doi: [10.1038/s41467-017-00789-w](https://doi.org/10.1038/s41467-017-00789-w)

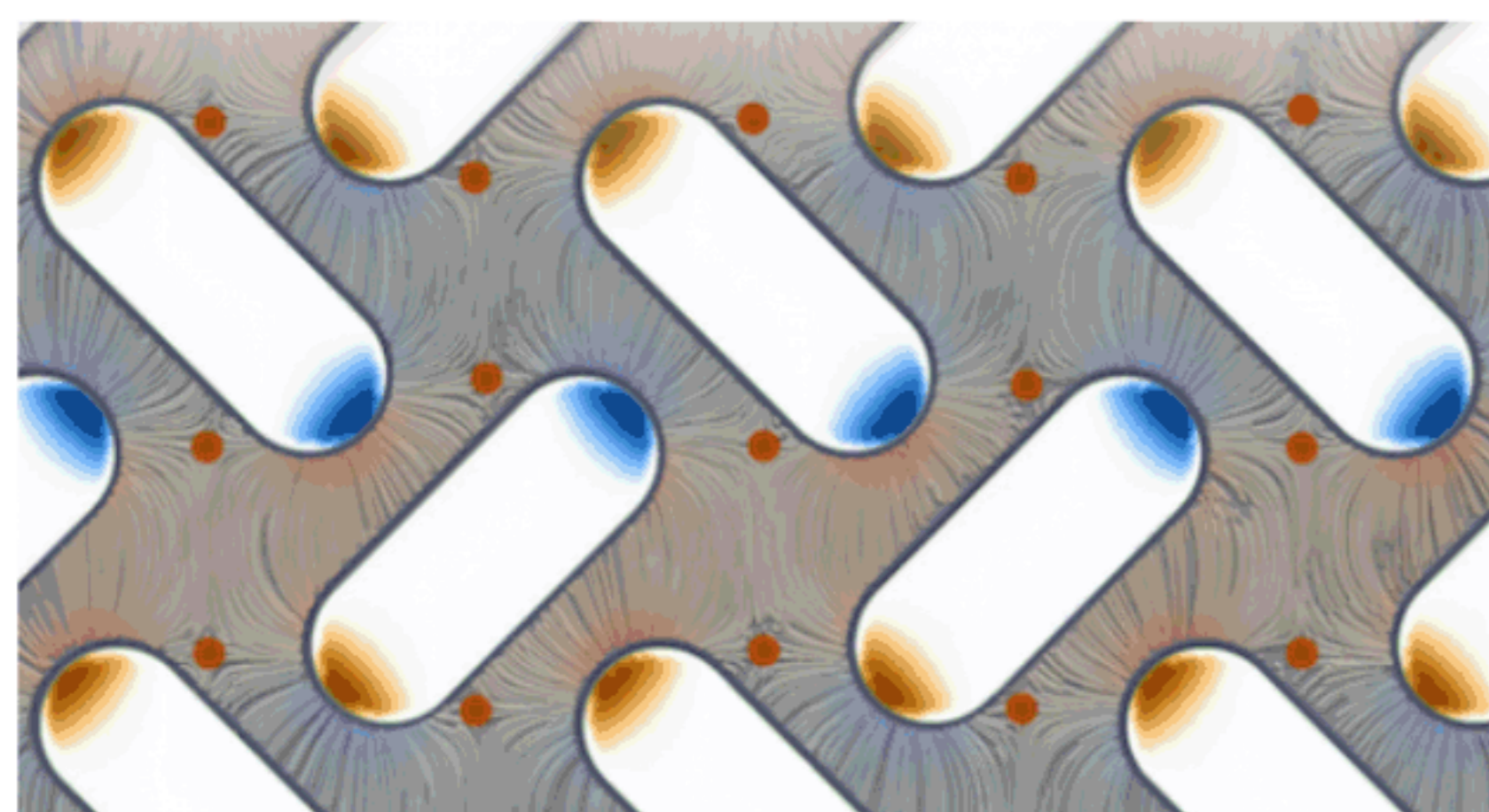


Fluid catalytic cracking, a century old chemical conversion process utilizing porous composites of zeolite and clay, up to this day provides the majority of the world's gasoline. Owing to harsh reaction environments and feedstock impurities the employed catalysts deactivate, necessitating their continuous fractional replacement with major refineries requiring up to 40 tons of fresh catalyst in total on a daily basis. Using a combination of ptychographic, x-ray diffraction and -fluorescence tomography researchers from PSI and ETH elucidated the structural changes behind catalyst deactivation.

Read more: <https://www.psi.ch/coherent-x-ray-scattering/making-the-world-go-round-a-look-into-the-structure-of-a-prominent-heterogeneous-catalyst>

Magnetic structures take a new turn

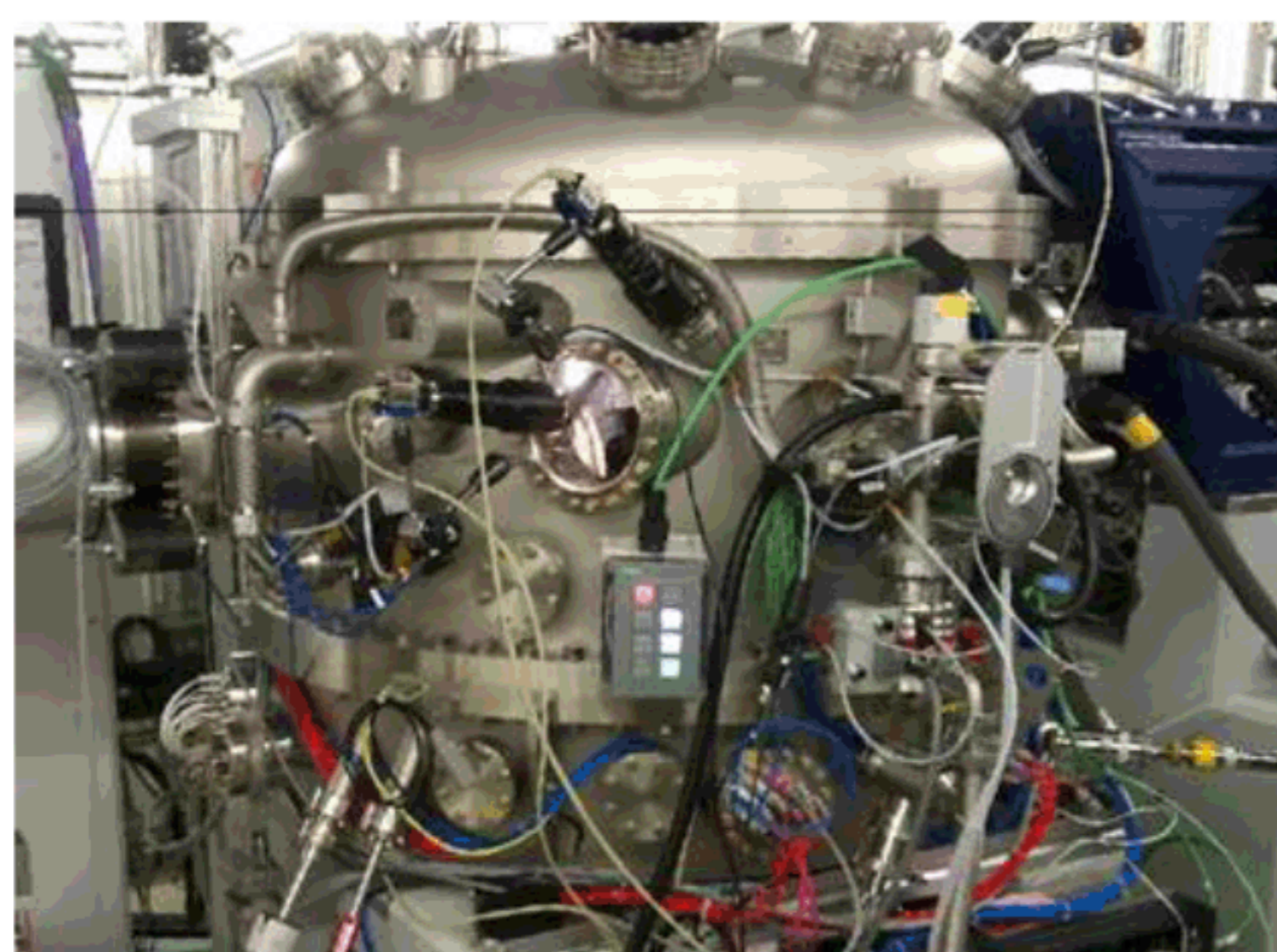
1. Emergent dynamic chirality in a thermally driven artificial spin ratchet, Gliga S. et al, *Nature Materials*, doi: [10.1038/nmat5007](https://doi.org/10.1038/nmat5007) (2017).



The unexpected finding that in an 'artificial spin ice' magnetostatic energy can be transformed into directed rotation of magnetization provides fresh insights into such nano-patterned magnetic structures — and might enable novel applications in nanoscale devices. Read more: <https://www.psi.ch/sls/scientific-highlights-and-news>

OMNY – A tOMography Nano crYo endstation

SH Shahmoradian et al, *nature com, scientific reports* 7, article number: 6291, doi: [10.1038/s41598-017-05587-4](https://doi.org/10.1038/s41598-017-05587-4)



Ptychographic tomography can provide high-resolution quantitative 3D images of a sample. OMNY is an in-vacuum endstation that allows cryogenic sample conditions and a cryo load-lock system permits sample transfer of cryogenically fixed specimens. Accurate sample position required for the method is achieved via closed loop position control to a metrology system based on laser interferometry. OMNY is now in regular operation at the cSAXS beamline and proposals may be submitted. Typically, it is used for biological and other radiation sensitive samples such as polymers.

First imaging results on biological samples can be found here: <https://www.psi.ch/coherent-x-ray-scattering/photonic-structure-of-white-beetle-wing-scales-optimized-by-evolution>.

Read more: <https://www.psi.ch/sls/csaxs/endstations>