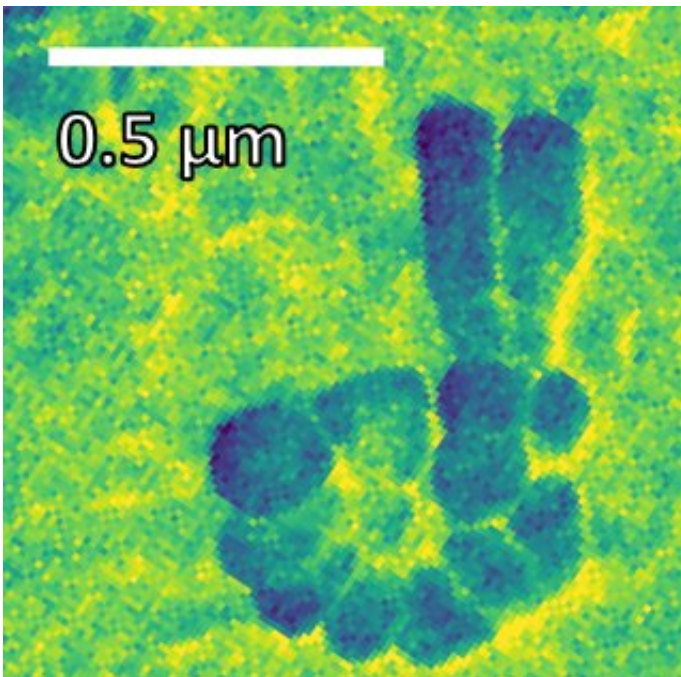


IRIS beamline at BESSY II gets a new nanospectroscopy end station

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Infrared image of the nucleolus in the nucleus of a fibroblast cell. The scale bar corresponds to 500 nanometers. Credit: HZB

The IRIS infrared beamline at the BESSY II storage ring now offers a fourth option for characterizing materials, cells and even molecules on different length scales. The team has extended the IRIS beamline with an end station for nanospectroscopy and nanoimaging that enables spatial resolutions down to below 30 nanometers. The instrument is also available to external user groups.

The infrared beamline IRIS at the BESSY II [storage ring](#) is the only infrared beamline in Germany that is also available to external user groups and is therefore in great demand. Dr. Ulrich Schade, in charge of the beamline, and his team continue to develop the instruments to enable unique, state-of-the-art experimental techniques in IR spectroscopy.

As part of a recent major upgrade to the beamline, the team, together with the Institute of Chemistry at Humboldt University Berlin, has built an additional infrared near-field microscope.

"With the nanoscope, we can resolve structures smaller than a thousandth of the diameter of a human hair and thus reach the innermost structures of biological systems, catalysts, polymers and [quantum materials](#)," says Dr. Alexander Veber, who led this extension.

The new nanospectroscopy end station is based on a scanning optical microscope and enables imaging and spectroscopy with [infrared light](#) with a [spatial resolution](#) of more than 30 nm. To demonstrate the performance of the new end station, Veber analyzed individual cellulose microfibrils and imaged cell structures. All end stations are available to national and international user groups.

Details related to the upgrade are [published](#) in the *Journal of Synchrotron Radiation*.

More information: Alexander Veber et al, Infrared spectroscopy across scales in length and time at BESSY II, *Journal of Synchrotron Radiation* (2024). [DOI: 10.1107/S1600577524002753](https://doi.org/10.1107/S1600577524002753)

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