Faster 3D nanoimaging a possibility with full colour synchrotron light

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Researchers can now see objects more precisely and faster at the nanoscale due to utilising the full colour spectrum of synchrotron light, opening the way for faster 3D nanoimaging.

This new methodology will provide for enhanced nanoimaging for studying bio samples for medical research, improved drug development and advanced materials for engineering.

Using the Advanced Photon Source, a synchrotron facility in Chicago, USA, researchers from the ARC Centre of Excellence for Coherent X-ray Science (CXS), headquartered at the University of Melbourne, revealed that by utilizing the full spectrum of colours of the synchrotron, they increased the clarity of biological samples and obtained a 60-fold increase in the speed of imaging.

Professor Keith Nugent, Laureate Professor of Physics at the University of Melbourne and Research Director of CXS, said the discovery was an exciting development.

“Typically for best imaging, researchers need to convert samples to crystals, but this is not always possible in all samples,” he said.

“This discovery of utilising full colour synchrotron light to improve precision and speed of imaging has huge potential in the field,” he said.

The international project was led by Dr Brian Abbey of the University of

Melbourne's School of Physics and CXS, whose team made the discovery.

"We will now be able to see things in detail at the nanoscale much more easily. It is like going from an old film camera to the latest digital SLR.' "The increase in speed, in particular, opens the way for us to see things faster in 3D at the nanoscale, which has previously taken an impracticably long time," Dr Abbey said.

The paper was published in the international journal *Nature Photonics.*

Provided by University of Melbourne