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SyncLab for cultural heritage – joint X-ray imaging and spectroscopy measurements at the synchrotron and in the laboratory

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X-ray imaging, diffraction and spectroscopy can reveal compositional, structural and chemical information of heterogeneous objects. In most cases, minimal sample preparation is necessary and non-destructive experiments can be realized, if possible radiation damage is monitored. This leads to the fact, that such techniques are widely used in the field of art and archaeometry.

While routine investigations on many objects can be performed with laboratory equipment, more specialized investigations are sometimes only possible at synchrotron radiation facilities, due to the higher brilliance of the X-radiation. The combination of using both benefits two communities – the application experts in the field of cultural heritage as well as the instrumentalists.

In the framework of the joint research group SyncLab between the Helmholtz-Zentrum Berlin and the TU Berlin, experiments are performed both at the BLiX – the Berlin laboratory for innovative X-ray technologies – and at BESSY II. External users have the possibility when applying for beamtime at BESSY II to additionally use laboratory equipment offered by BLiX before or after the beamtime.

We present showcases of the synergy effects offered by the combination of synchrotron and laboratory experiments leading to optimized analytical results.

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