

Scanning The Brain Using X-Ray Scattering

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The brain is the most complicated structure we know. Hundreds of imaging techniques are being used to investigate it at multiple scales. While most methods are either destructive or non-specific, X-ray scattering offers some unique advantages: it can non-invasively provide specific information about its nanostructure. Of particular interest is myelin, the layered structure wrapped around neuronal axons, that enables fast and efficient electric signal transmission. The amount and integrity of myelin play an important role in brain's health, while orientation of neuronal axons provides insights about brain's connectivity.

In this talk I will provide an overview of the studies on mouse, primate and human brains at European and US synchrotrons, using new scanning and (tensor-)tomographic methods.