ForMAX - Zooming into hierarchical materials

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Joint initiative on forest-based materials

KAW and the paper and packaging industry is funding a beamline at MAX IV to promote research on new materials and specialty chemicals from the forest.

Treesearch partners:





































ForMAX beamline

Funding:

- 100 MSEK investment for construction cost by KAW
- 80 MSEK operation cost by industry via Treesearch

Beam time allocation:

- 50% Treesearch access
- 50% general access

Full user operation since September 2023 **Analysis**

Shedding light on forest materials: synchrotron science holds the key

Sweden's Treesearch initiative is partnering with large-scale research facilities like the MAX IV synchrotron laboratory to realize sustainable products based on materials from the forest. **Joe McEntee** finds out more

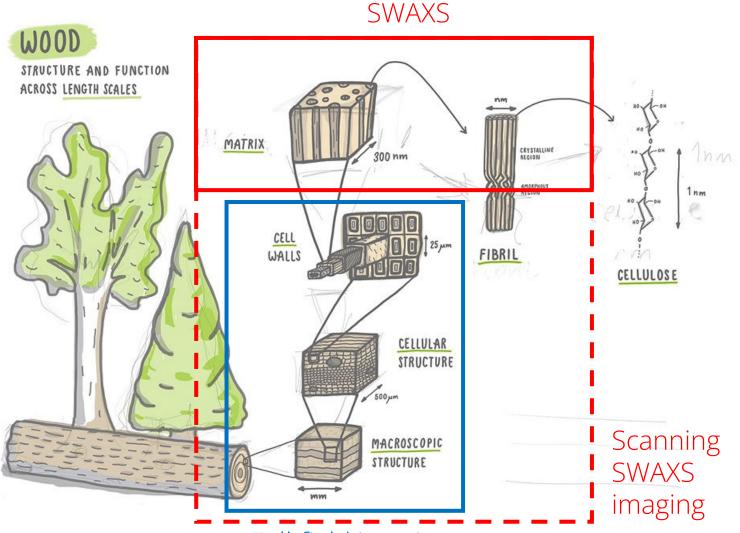


Big science, big opportunities The ForMAX beamline provides academic and industry scientists working within the Treesearch consortium with a dedicated access point into the research environment at Sweden's MAX IV synchrotron radiation facility (above).



Multiscale & multimodal structural characterisation

Structure-function relationship

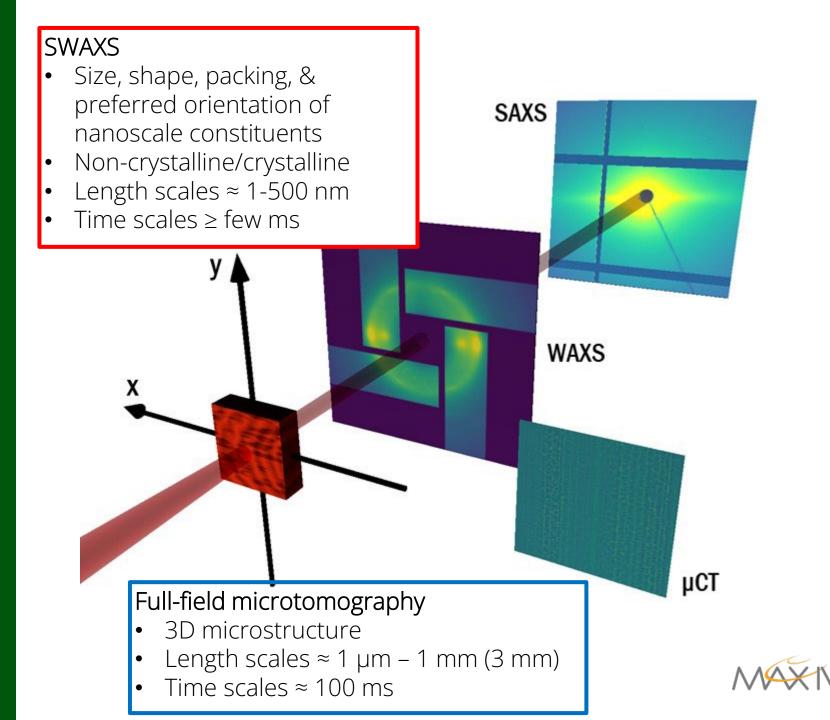




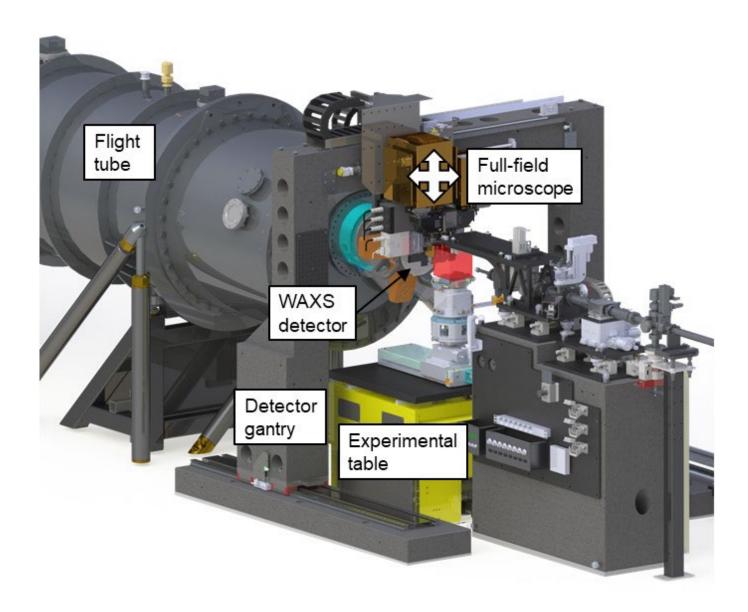


Multiscale & multimodal structural characterization

- 8 25 keV
- Soft materials
- *In situ* experiments

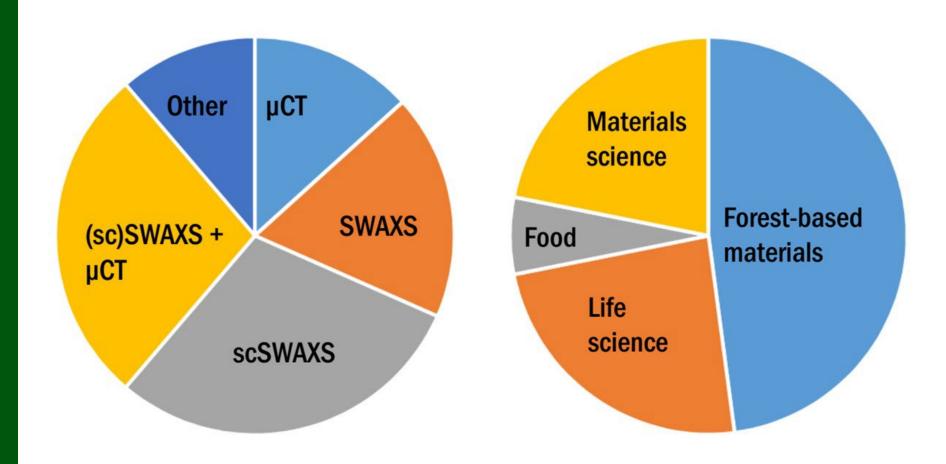


Multiscale & multimodal structural characterization

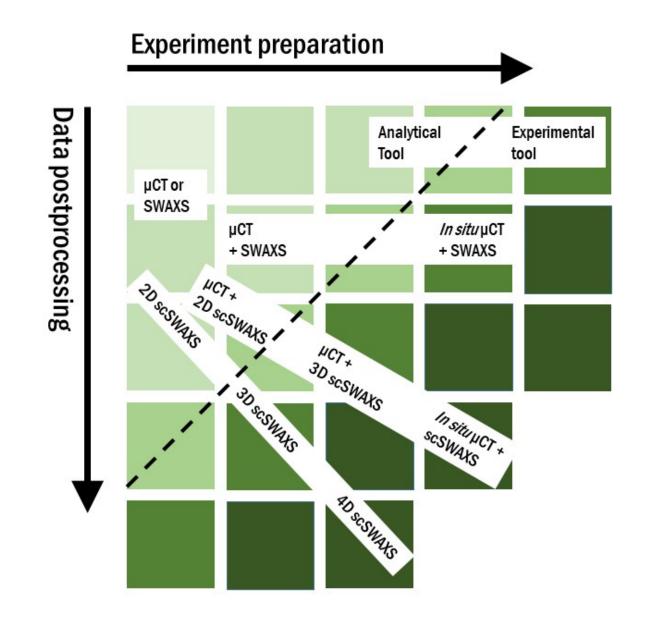




Proposal statistics – User base

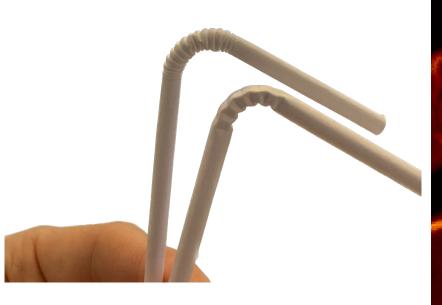


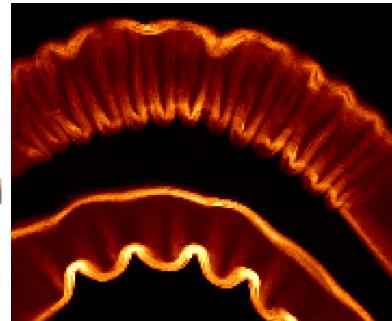
Experimental challenges



Example #2: Sustainable, biobased packaging







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In 2022 Tetra Pak moved to the next level of development – testing a fibre-based barrier to substitute the aluminium foil layer that is a first within food carton packages distributed under ambient conditions. In addition, in collaboration with MAX IV, we have embarked on ground-breaking research towards advancing fibre-based sustainable food packaging. The research aims to uncover fresh insights into the nanostructure of fibre materials, with the first application to optimise the composition of materials used for paper straws, helping to uncover fresh

insights into plant-based materials as a basis for future innovations. This is the very first industrial research and development experiment at ForMAX, a brand new research station dedicated to studying materials from the forest, located at the MAX IV Laboratory in Lund, Sweden.

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Questions?