

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

Shedding light on forest materials: synchrotron science holds the key

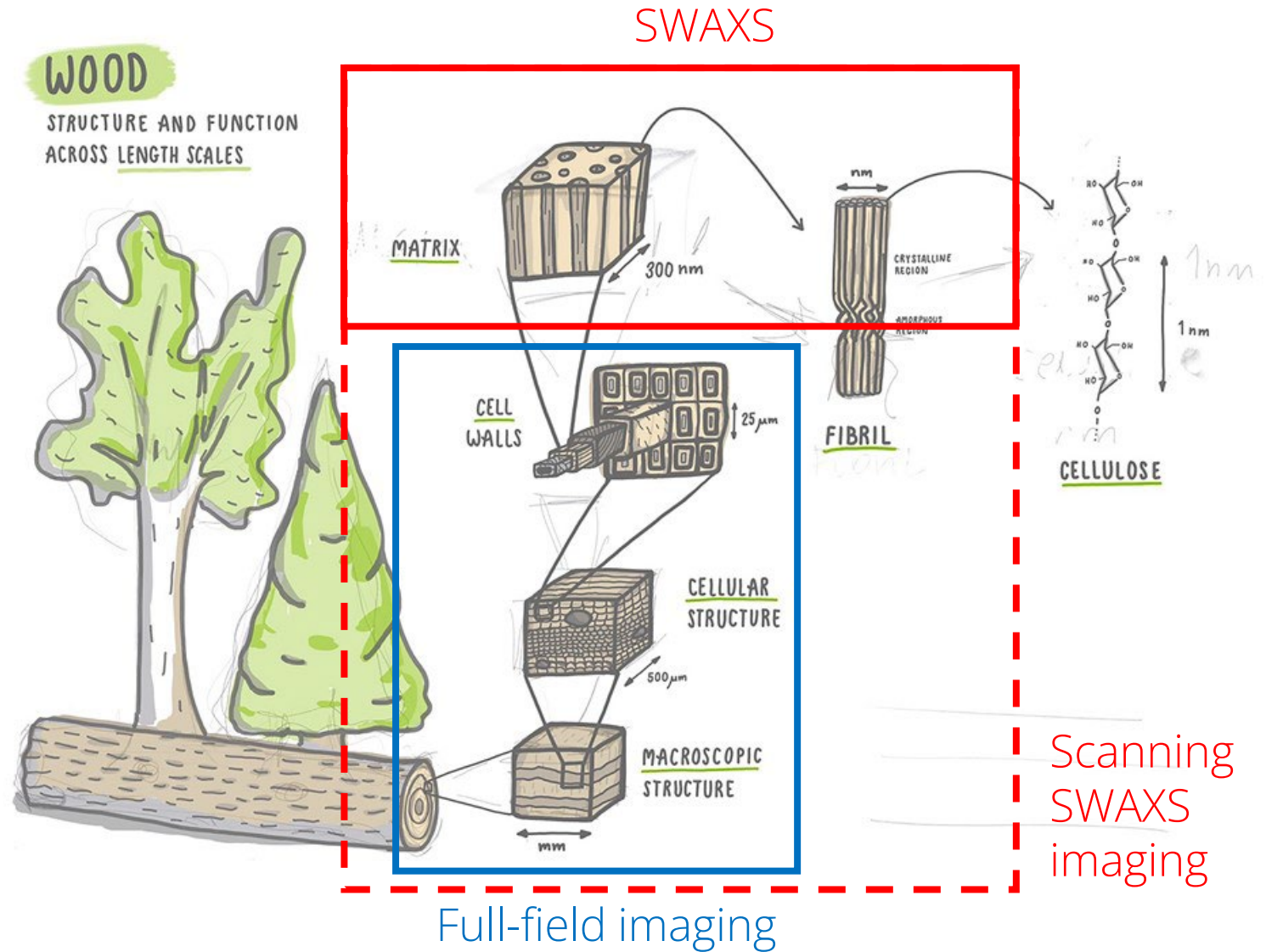
Sweden's TreeSearch initiative is partnering with large-scale research facilities like the MAX IV synchrotron laboratory to realize sustainable products based on materials from the forest. **Joe McEntee** finds out more



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

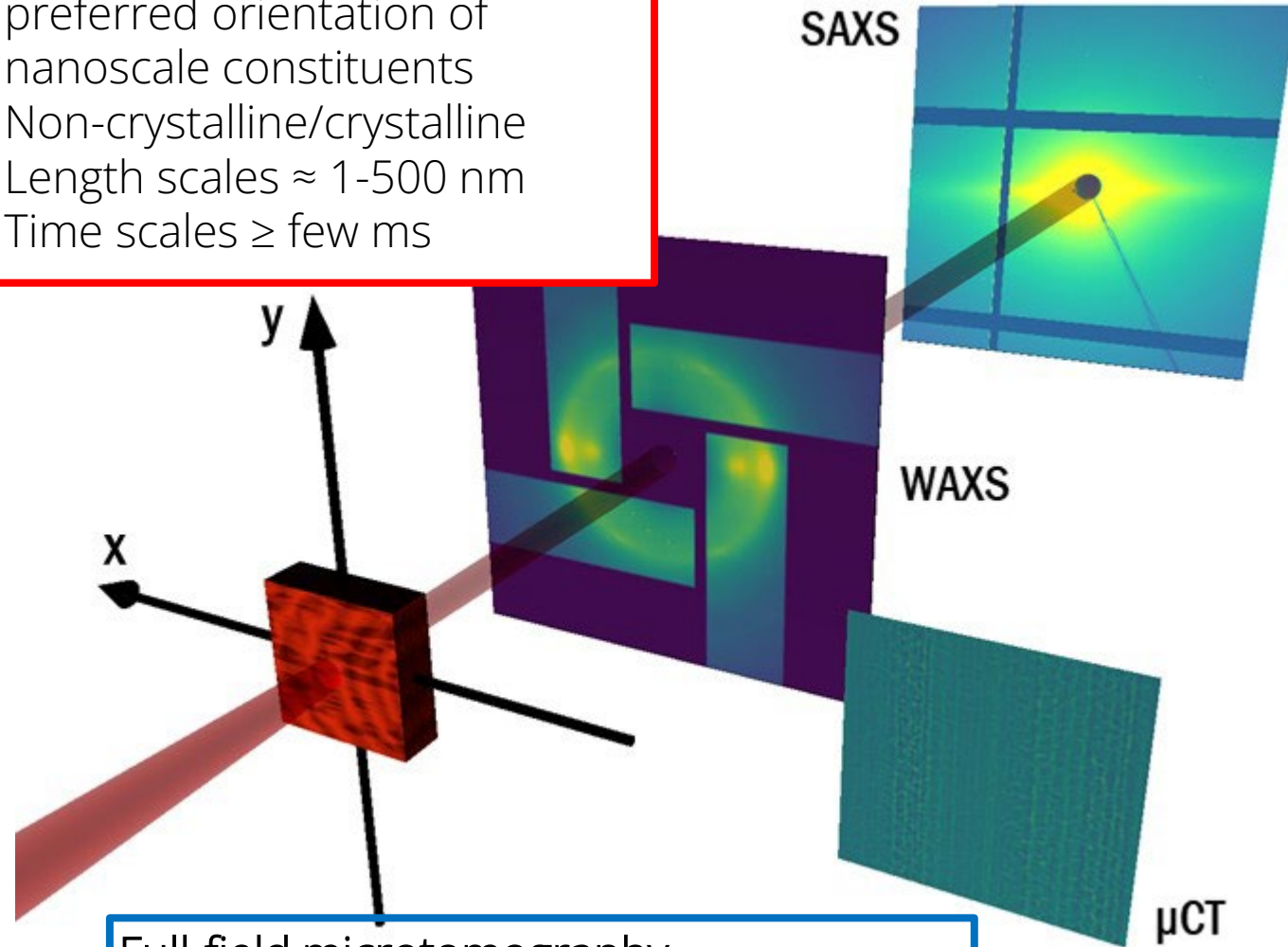


Multiscale & multimodal structural characterization

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

SWAXS

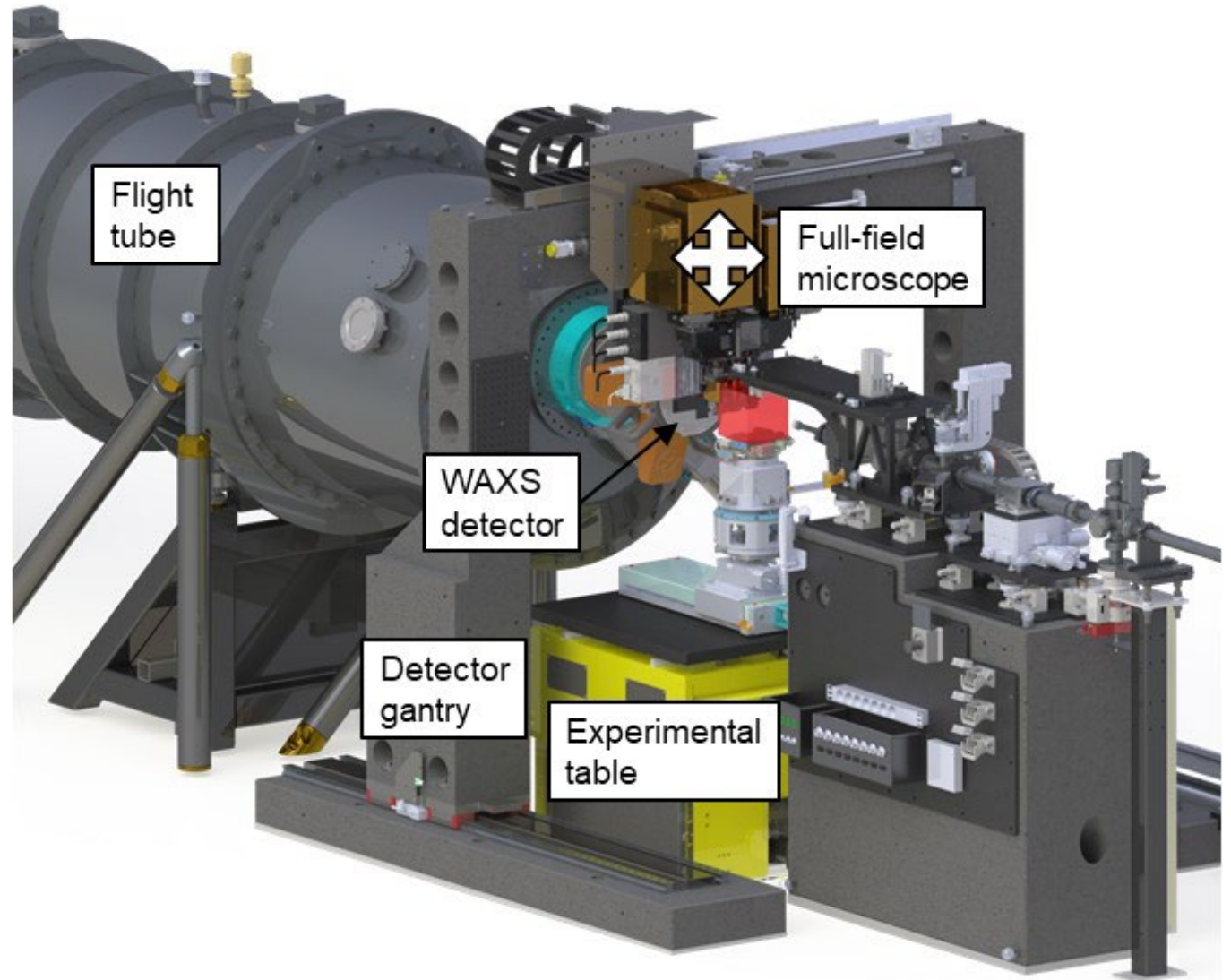
- Size, shape, packing, & preferred orientation of nanoscale constituents
- Non-crystalline/crystalline
- Length scales \approx 1-500 nm
- Time scales \geq few ms



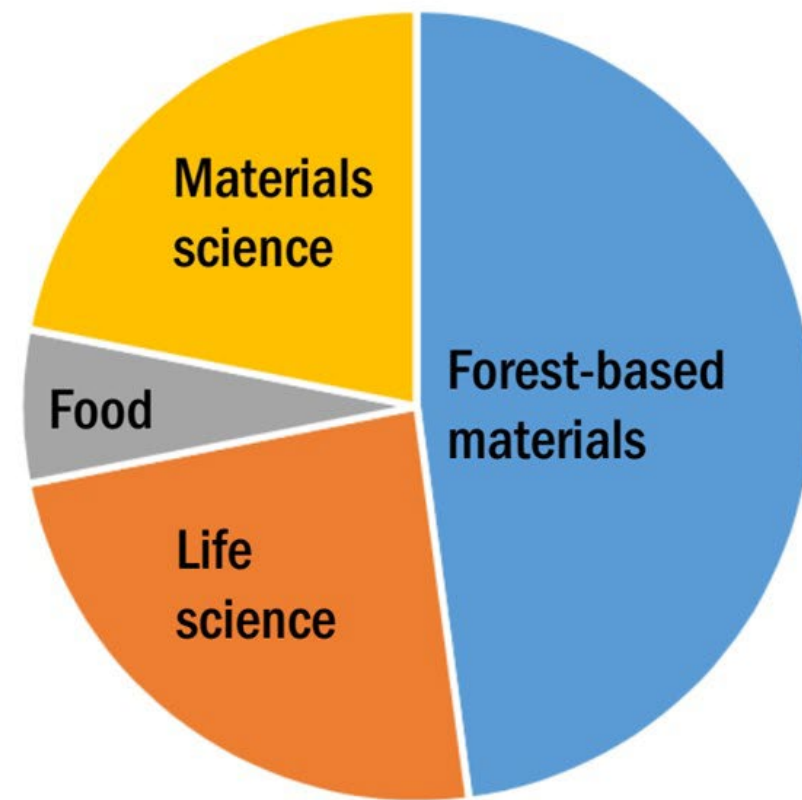
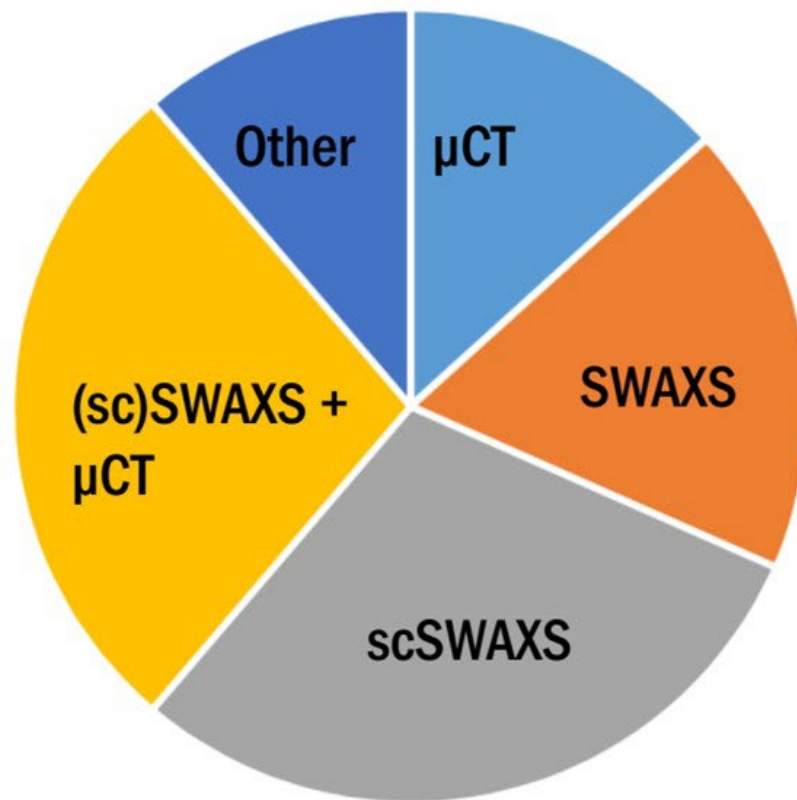
Full-field microtomography

- 3D microstructure
- Length scales \approx 1 μ m – 1 mm (3 mm)
- Time scales \approx 100 ms

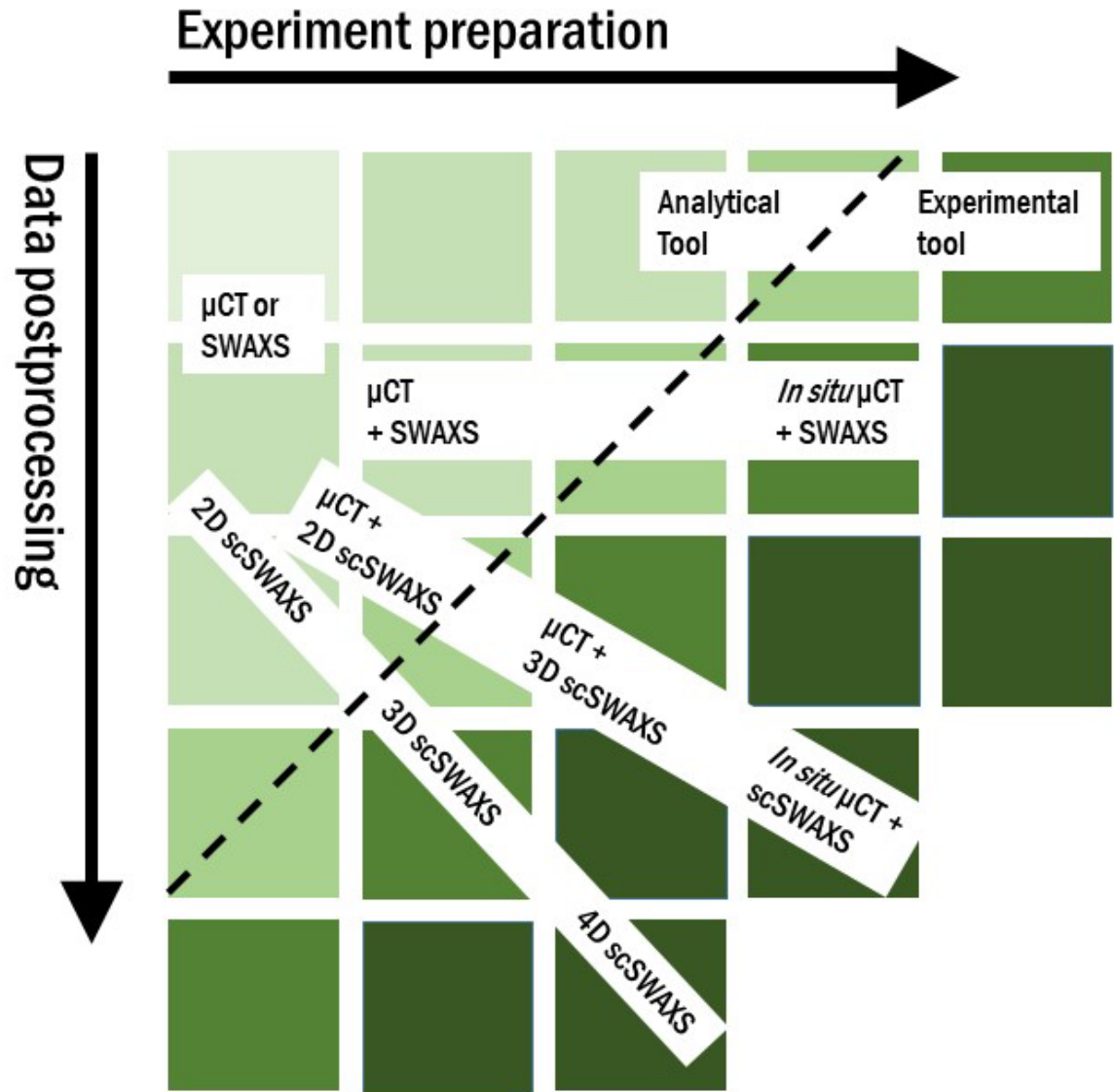
Multiscale & multimodal structural characterization



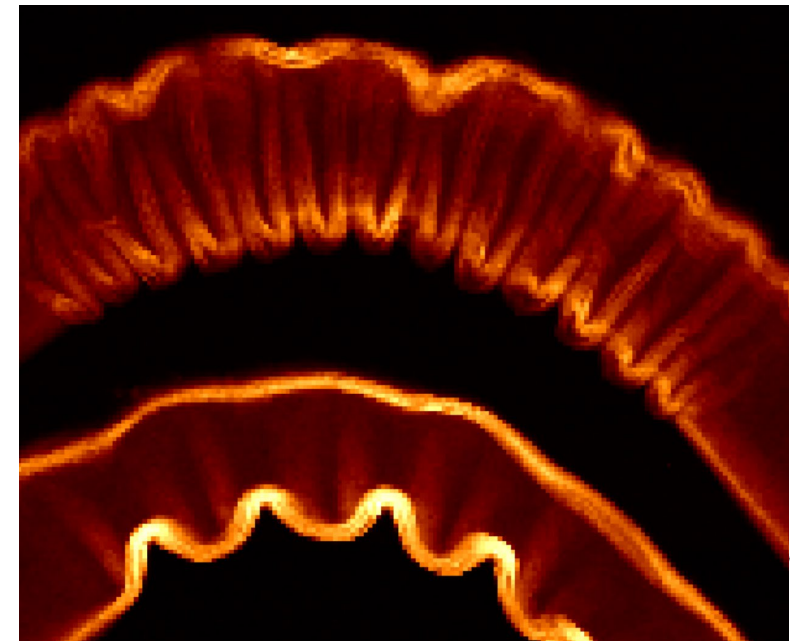
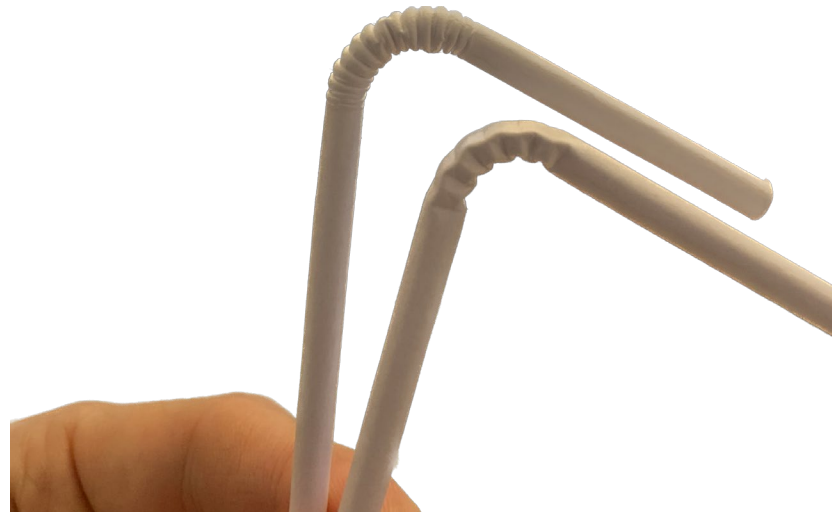
Proposal statistics – User base



Experimental challenges



Example #2: Sustainable, biobased packaging





Questions?