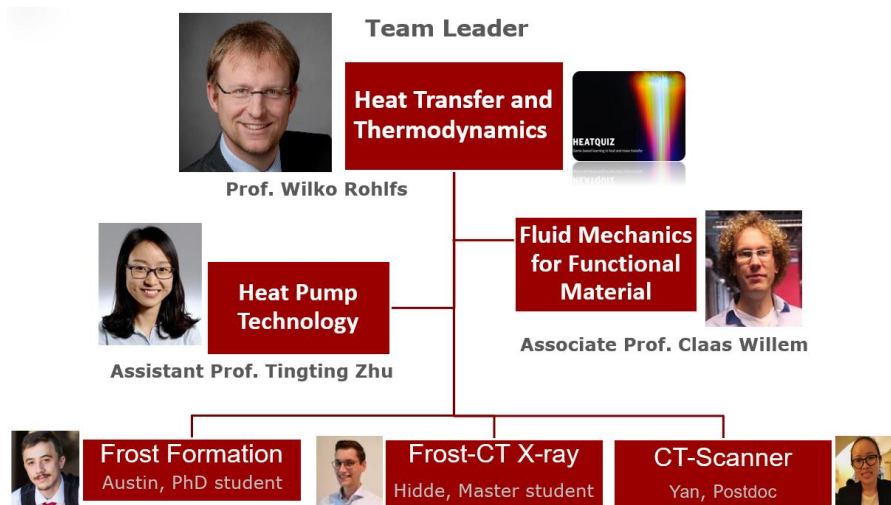


Understanding Frost Formation on μ -scale

Heat Transfer and Thermodynamics (HTT) University of Twente

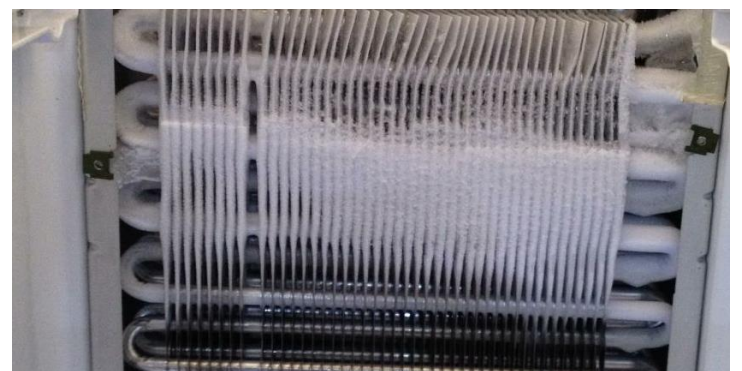


Micro-CT investigation and modelling of frost formation

Reveal the relationship between the external psychrometric conditions and the internal microstructural and transport properties of frost by μ -CT experimental and simulation method.

Feasibility study

- Urea crystal structures were scanned in a ZEISS Xradia Context.
- Resulting 3D scans were processed and segmented using Dragonfly.
- Effective local thermal and mass diffusivity were determined by a 3D steady-state diffusion equation.
- Feasibility of the entire procedure is confirmed.



Frost formation on evaporator plates



Urea structure



Reconstruct urea structure

Envisioned next steps

- Design and construction of an environmental chamber for frost growth
- In-situ frost growth scanning
- Frost growth modelling

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