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Florian Bas, Maude Jimenez, Vincent Thomy, Yannick Coffinier

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# Development of biomimetic anti-icing for second generation refrigerating systems

BAS Florian<sup>1,2</sup>, JIMENEZ Maude<sup>2,3</sup>, THOMY Vincent<sup>1</sup>, COFFINIER Yannick<sup>1</sup>

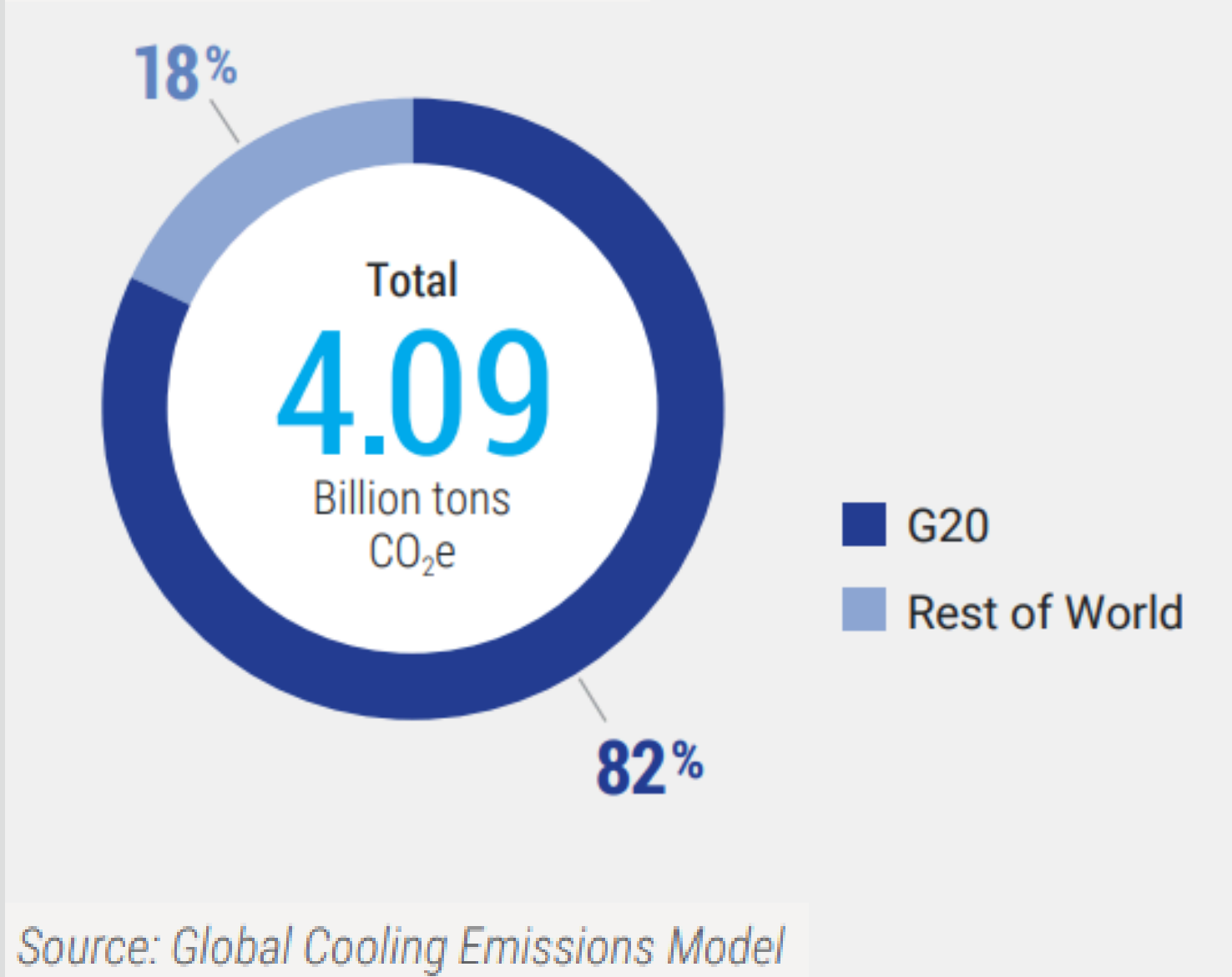
1. Univ. Lille, CNRS, Univ. Polytechnique Hauts-de-France, UMR 8520 - IEMN - Institut d'Electronique de Microélectronique et de Nanotechnologie, F-59000 Lille, France

2. Univ. Lille, CNRS, INRAE, Centrale Lille Institut, UMR 8207 - UMET - Unité Matériaux et Transformations, France

3. Institut Universitaire de France (IUF), Rue Descartes, 75000 Paris

## Context

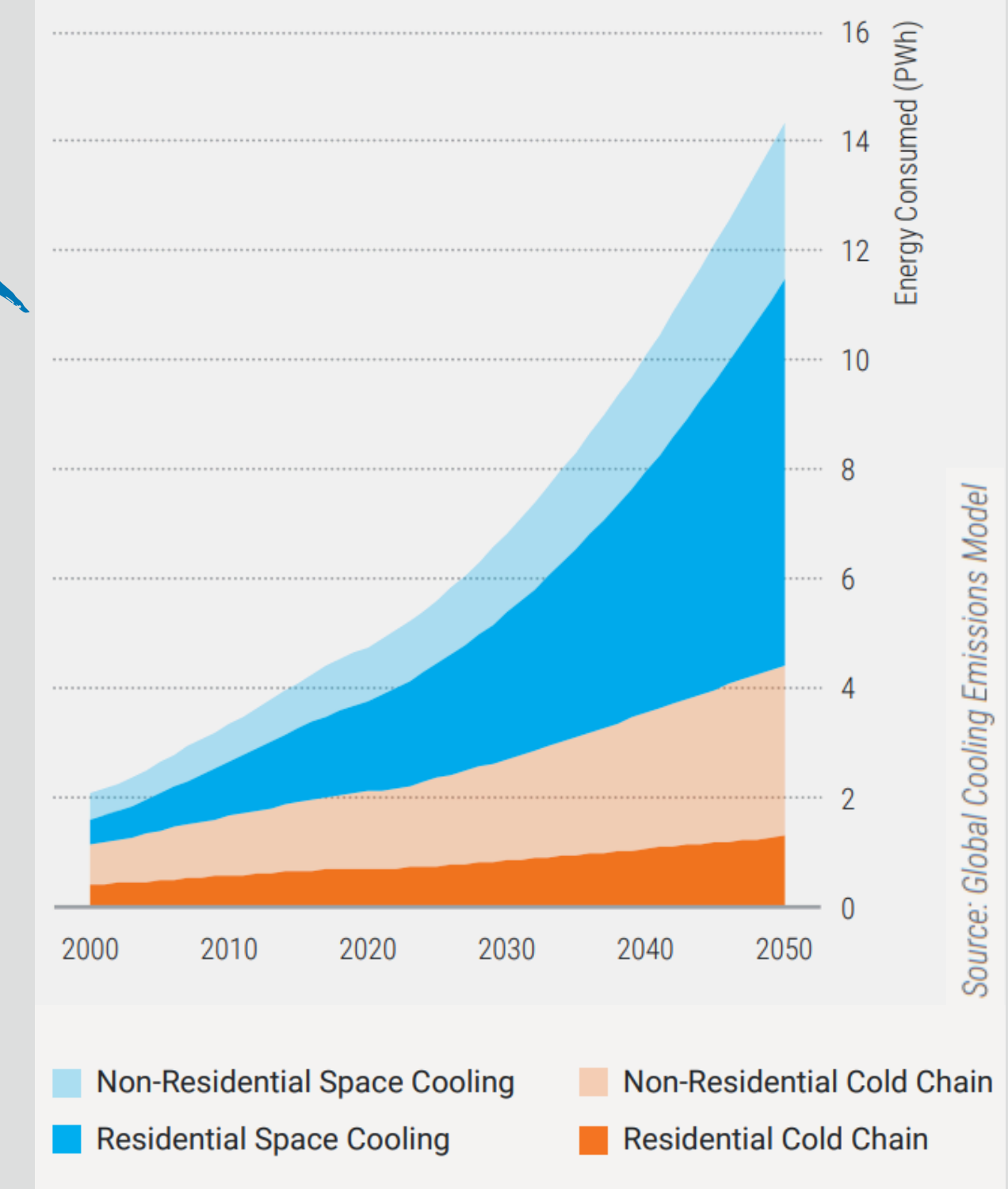
Total Cooling, GHG Emissions (%)



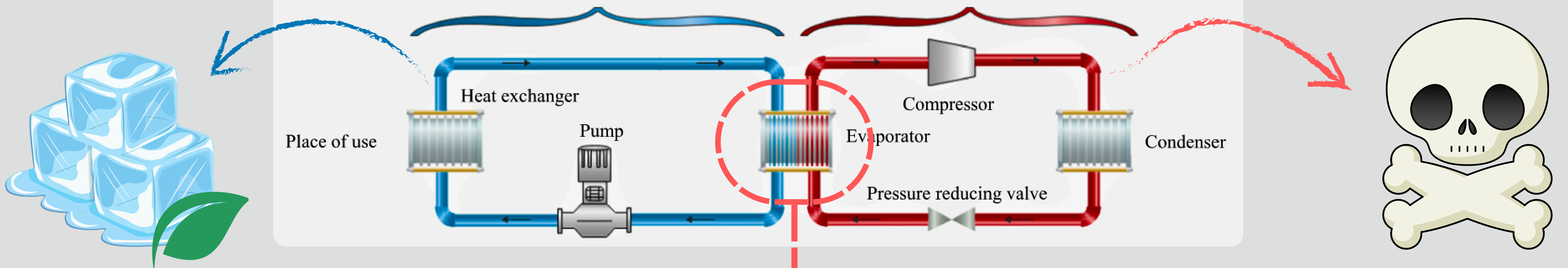
Around 30% of global energy consumption

Around 10% of global GHG emissions

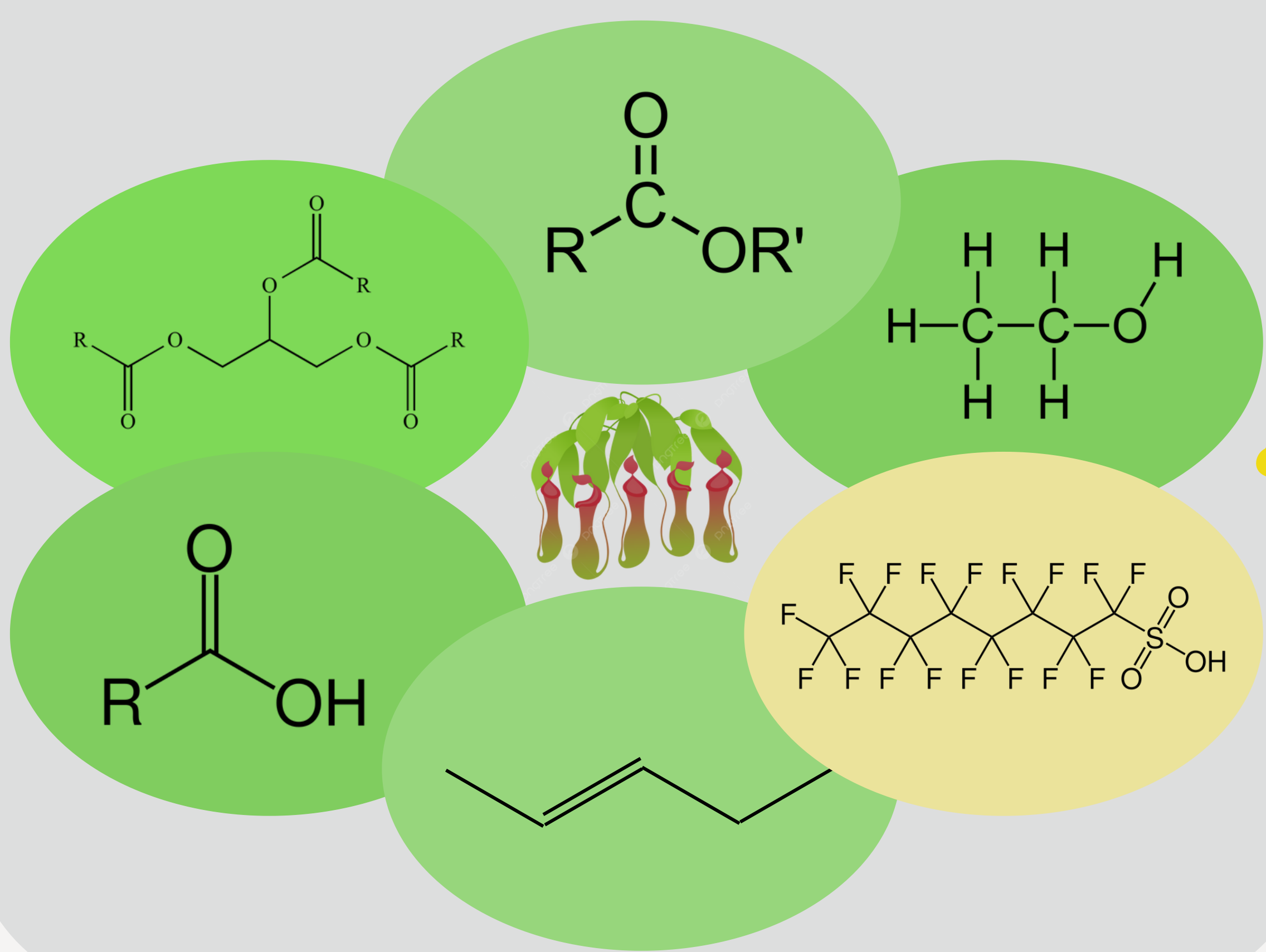
Energy Consumption of cooling equipment



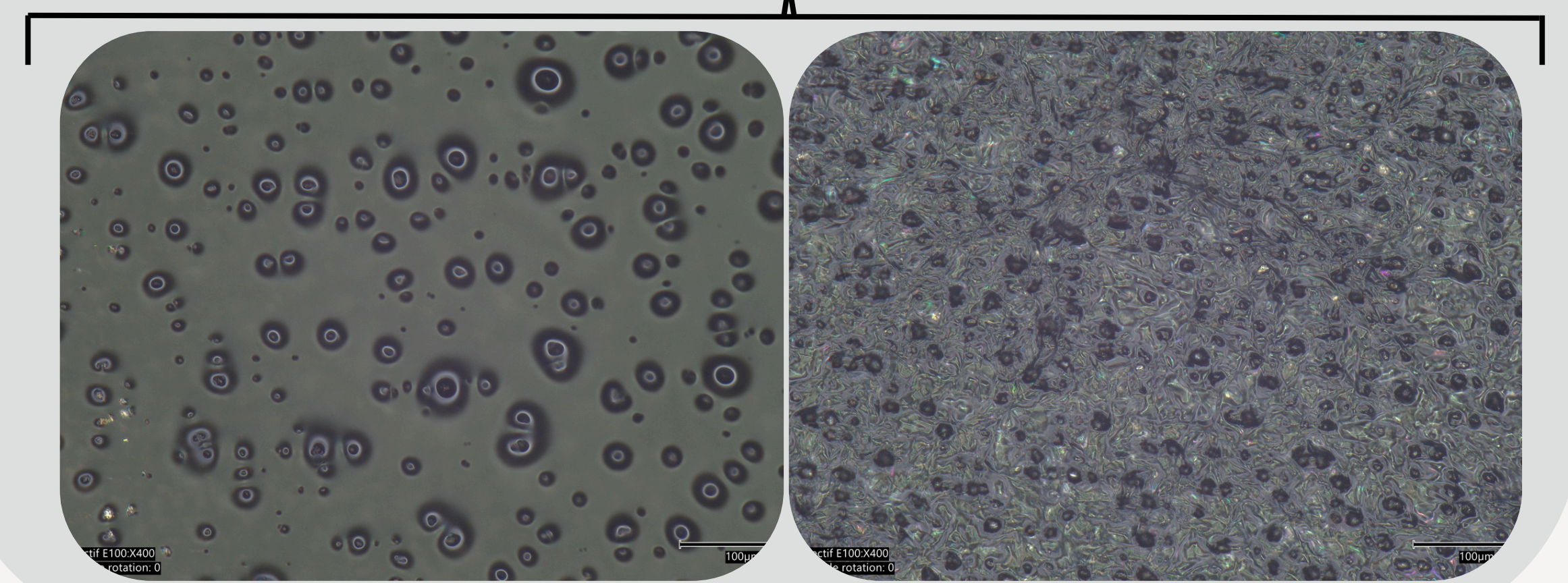
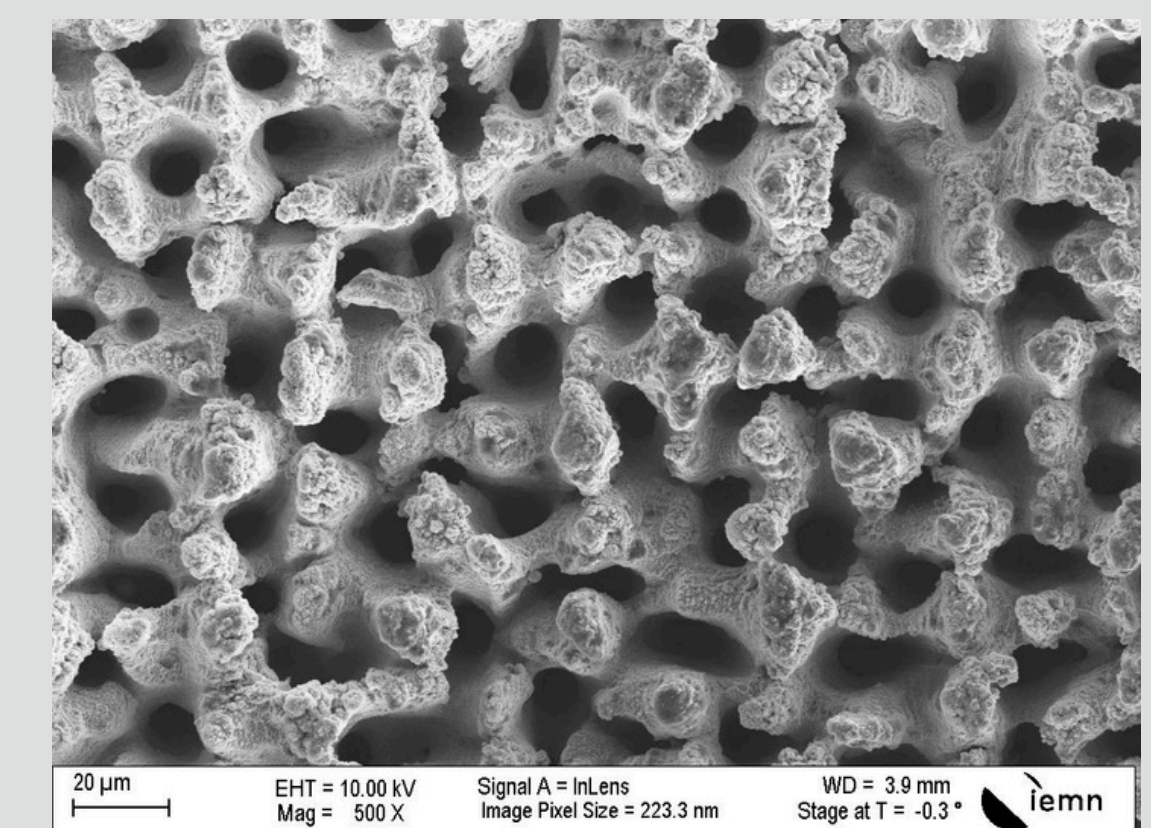
Secondary circuit: transport and use of cold Primary circuit: cold production



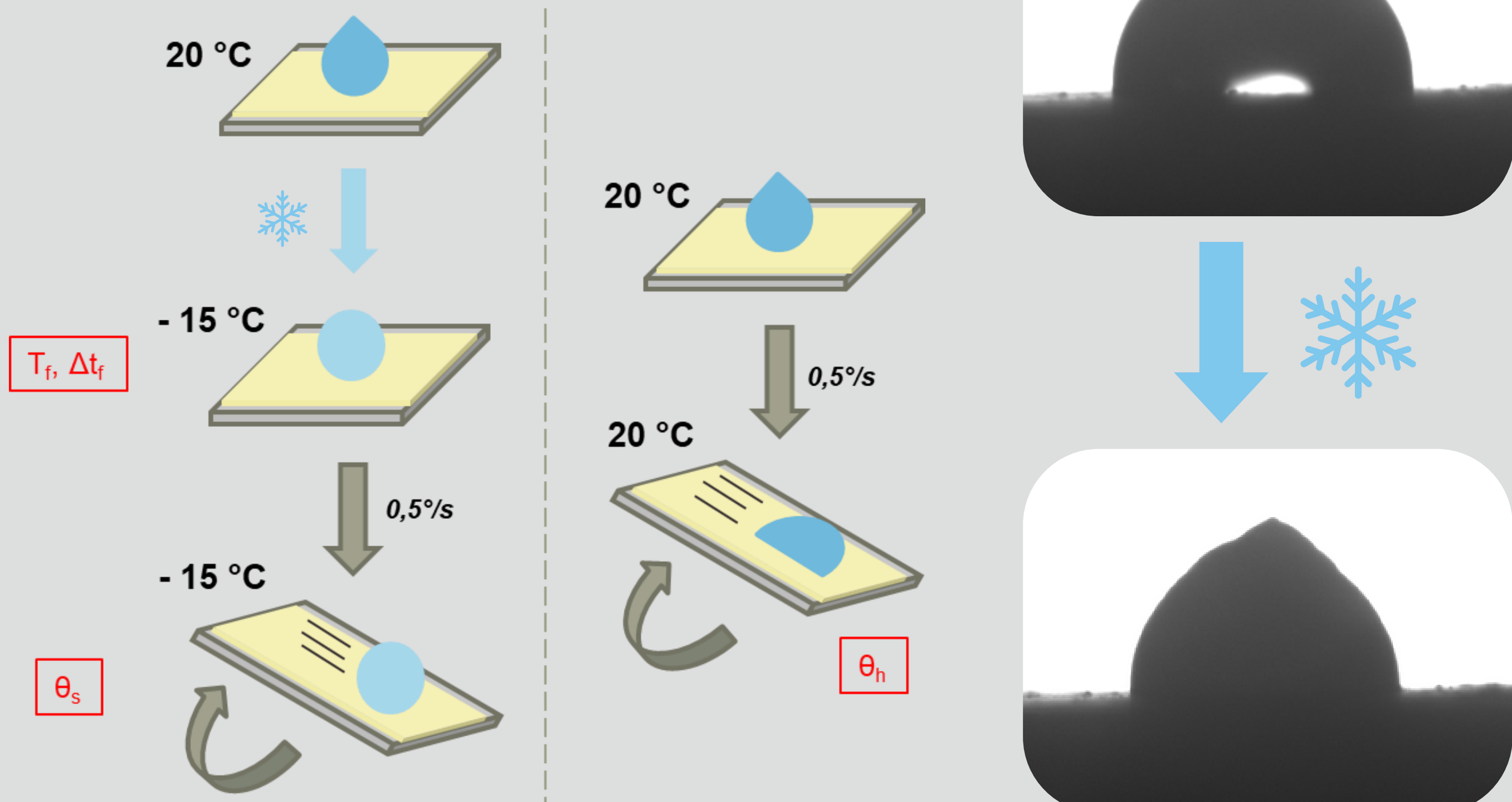
## Choice of lubricant



## Surface texturing

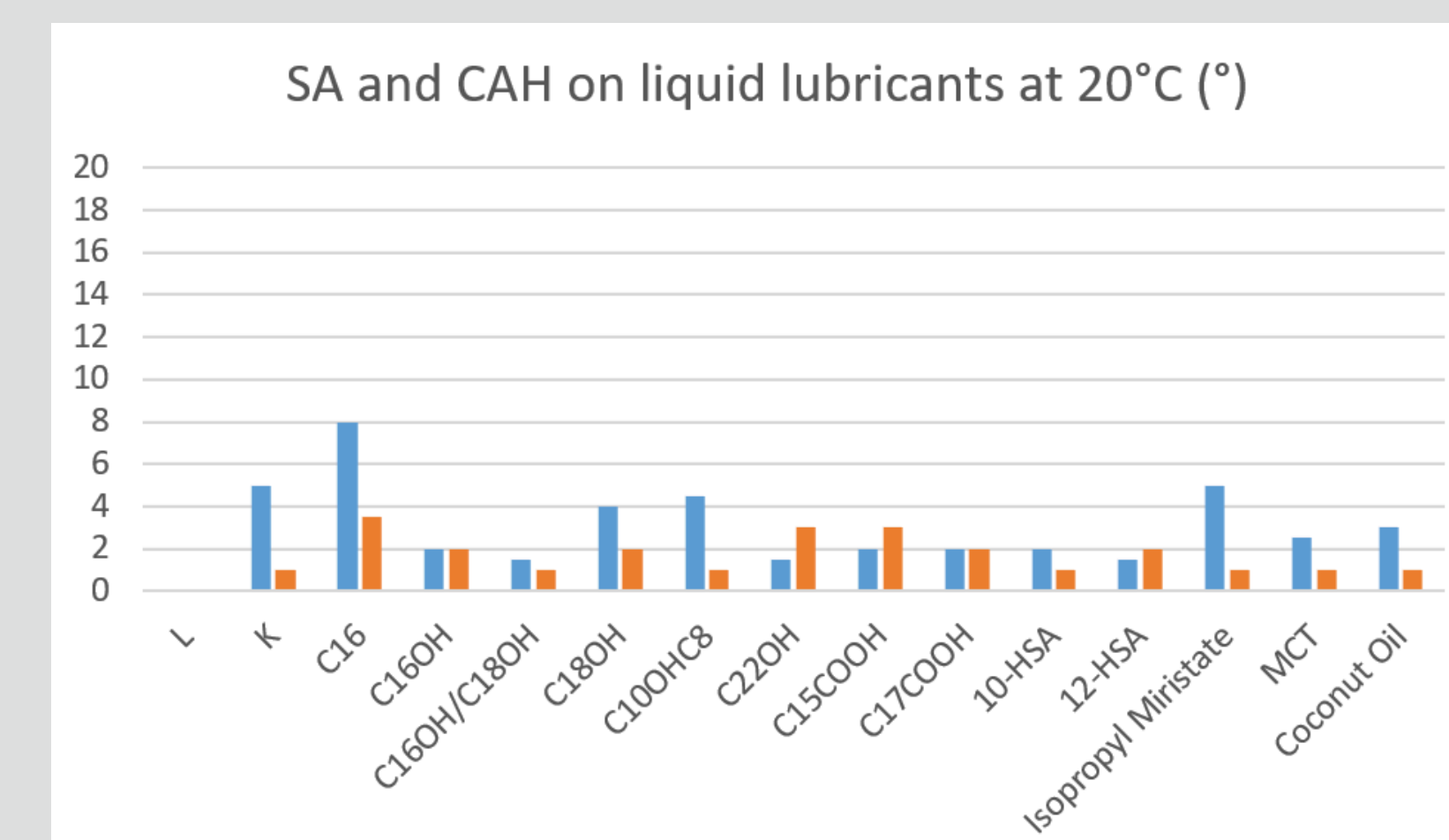


## Surface characterization



## Results and outlooks

Sliding Angle (SA)  
Contact Angle Hysteresis (CAH)



- No sliding on solid surfaces or below 0°C
- Easy sliding on liquid lubricants

- Is sliding prevented by rugosity of solid surfaces?
- Can ice particles slide under higher external strength?