



Berner Fachhochschule  
Haute école spécialisée bernoise  
Bern University of Applied Sciences



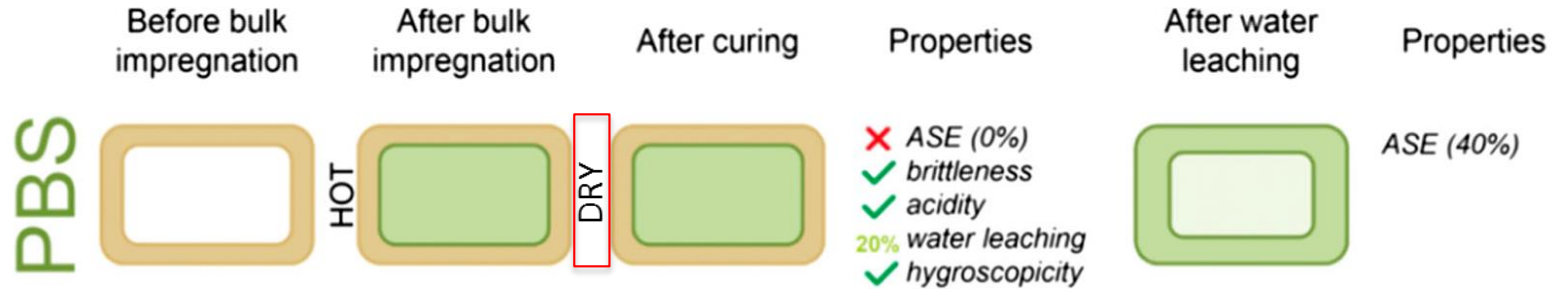
# Modifying wood with PBS.

## Influence of humidity on oligomers diffusion into the wood cell walls by screening of heat treatment parameters.

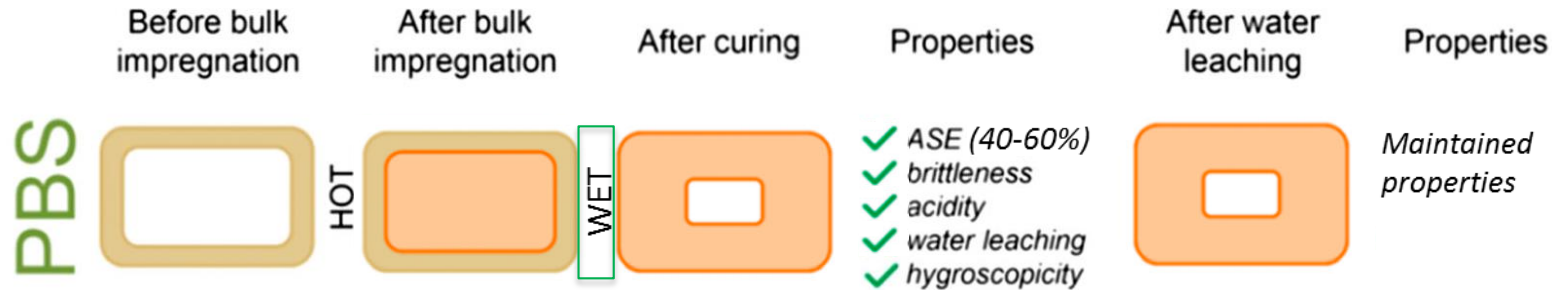
Charlotte GROSSE, M. NOËL, L. RAUTKARI, P. GERARDIN

# The COST project - BioThermoWood

- ▶ Objective: increase wood **outdoor performance** in term of sensitivity to **moisture** while maintaining good **mechanical properties**
- ▶ Background results



- ▶ Objectives of this project



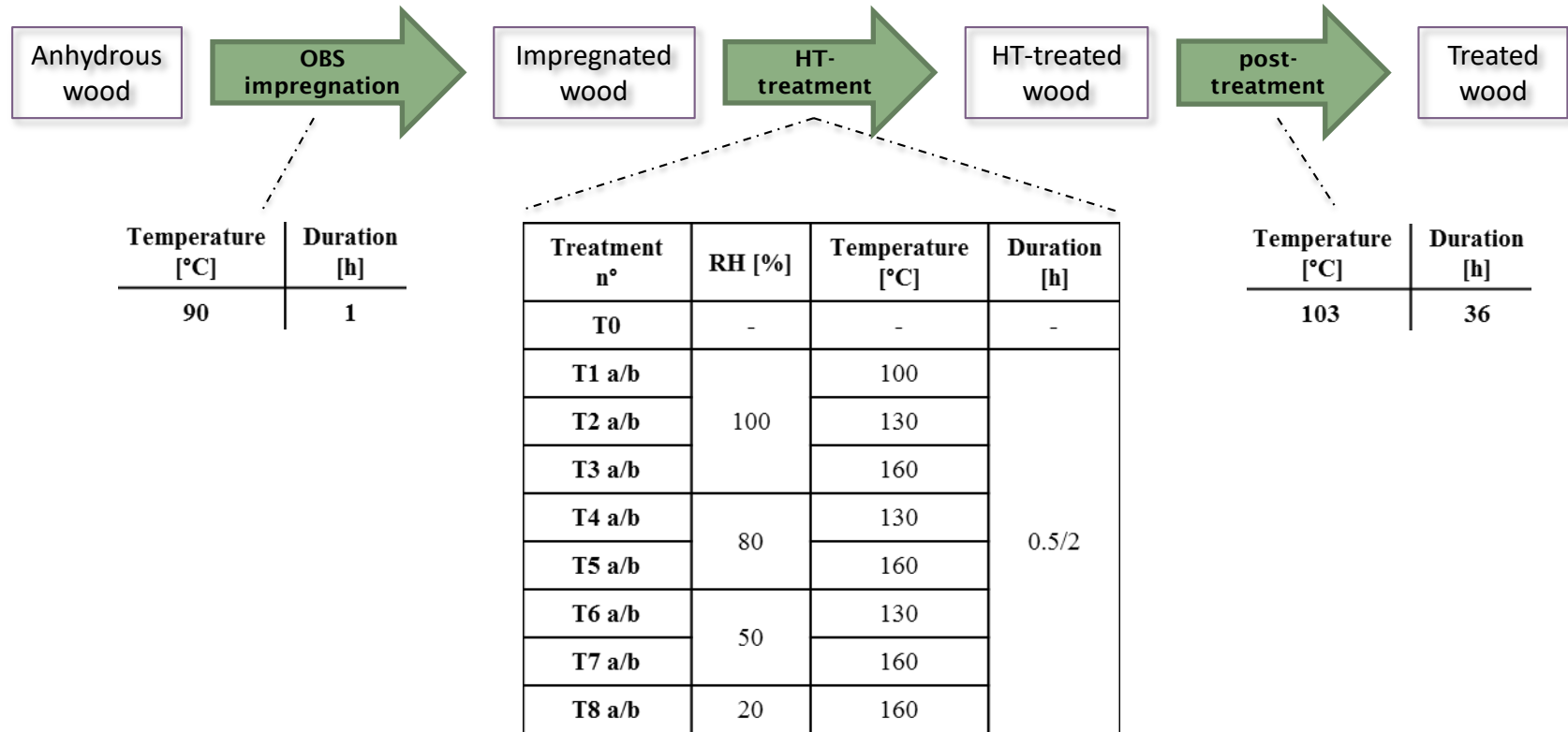
# Collaboration with Aalto University



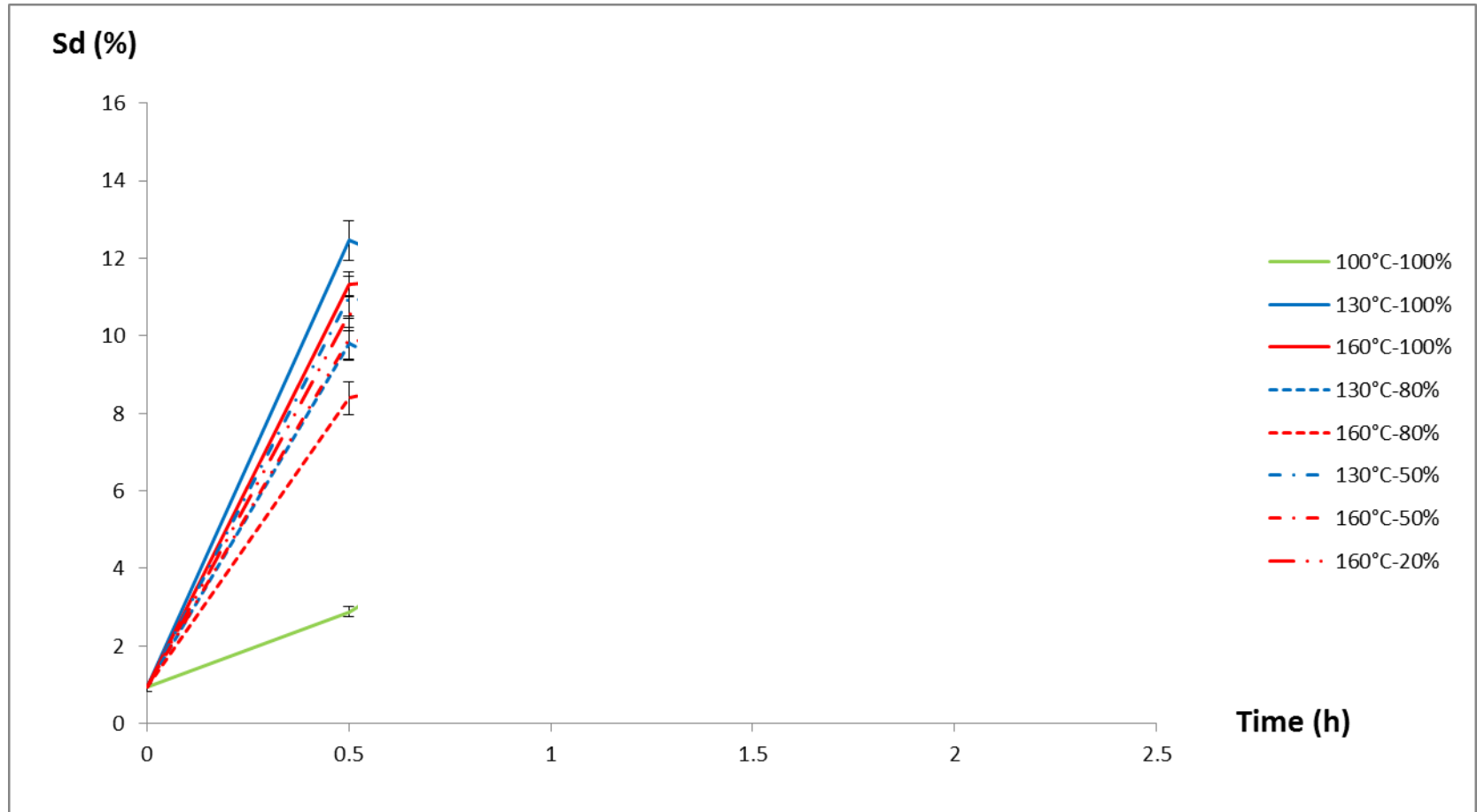
- ▶ Home made reactor of Aalto University
- ▶ Controlled Temperature and RH



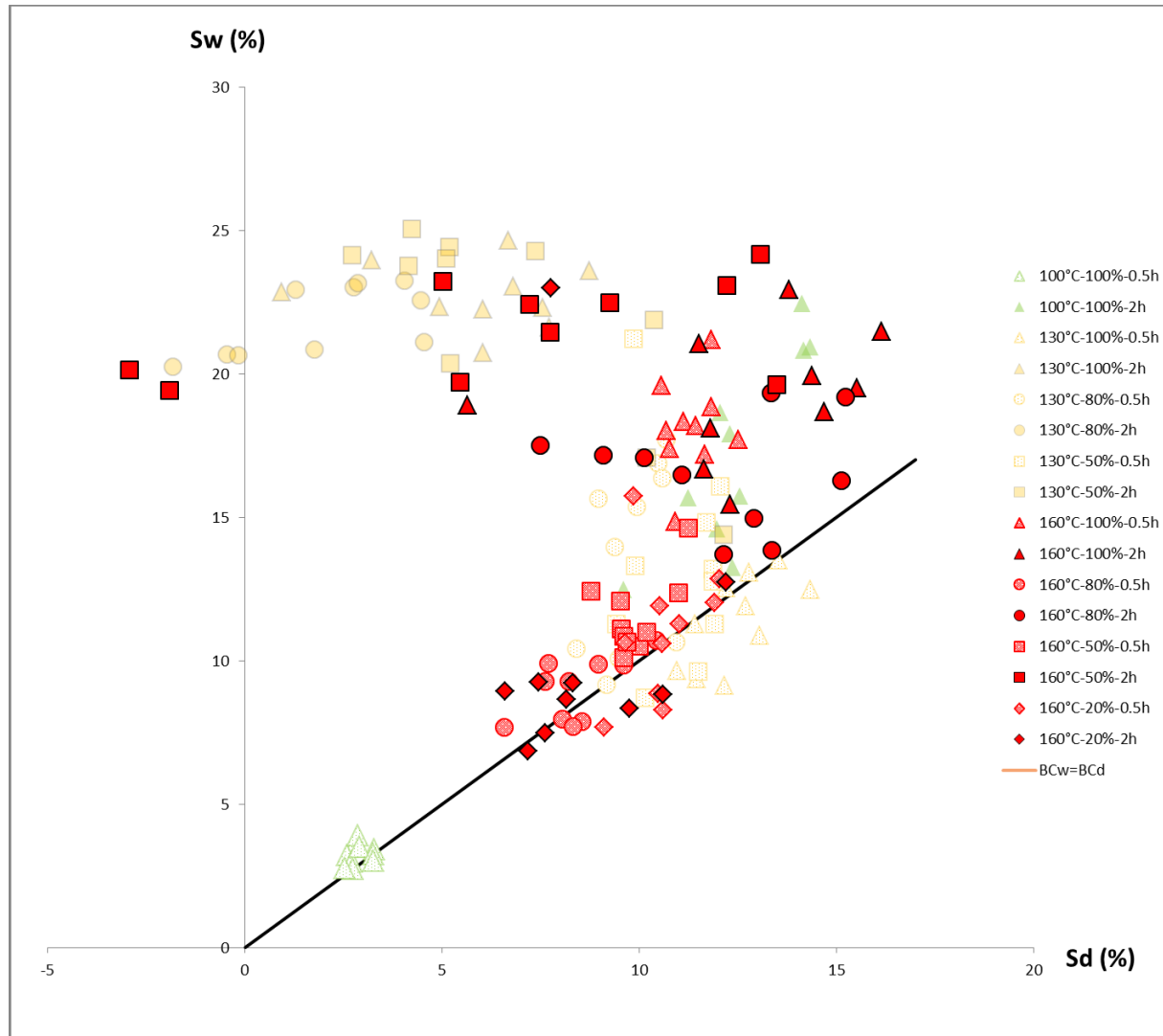
# Treatment Process



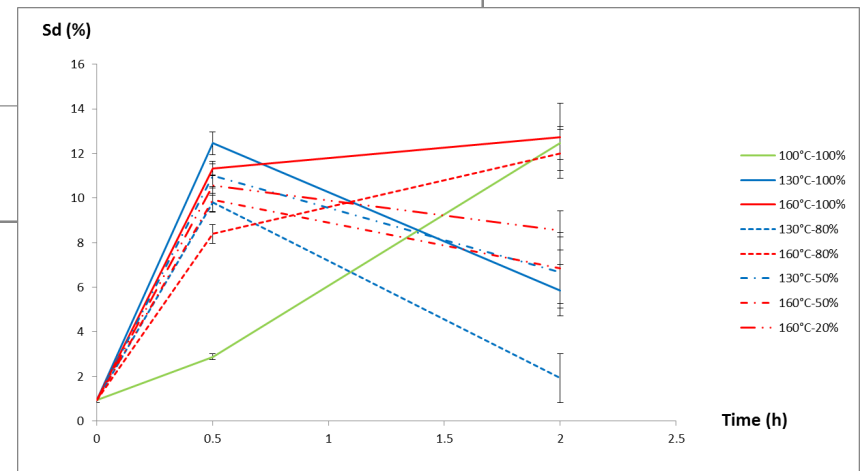
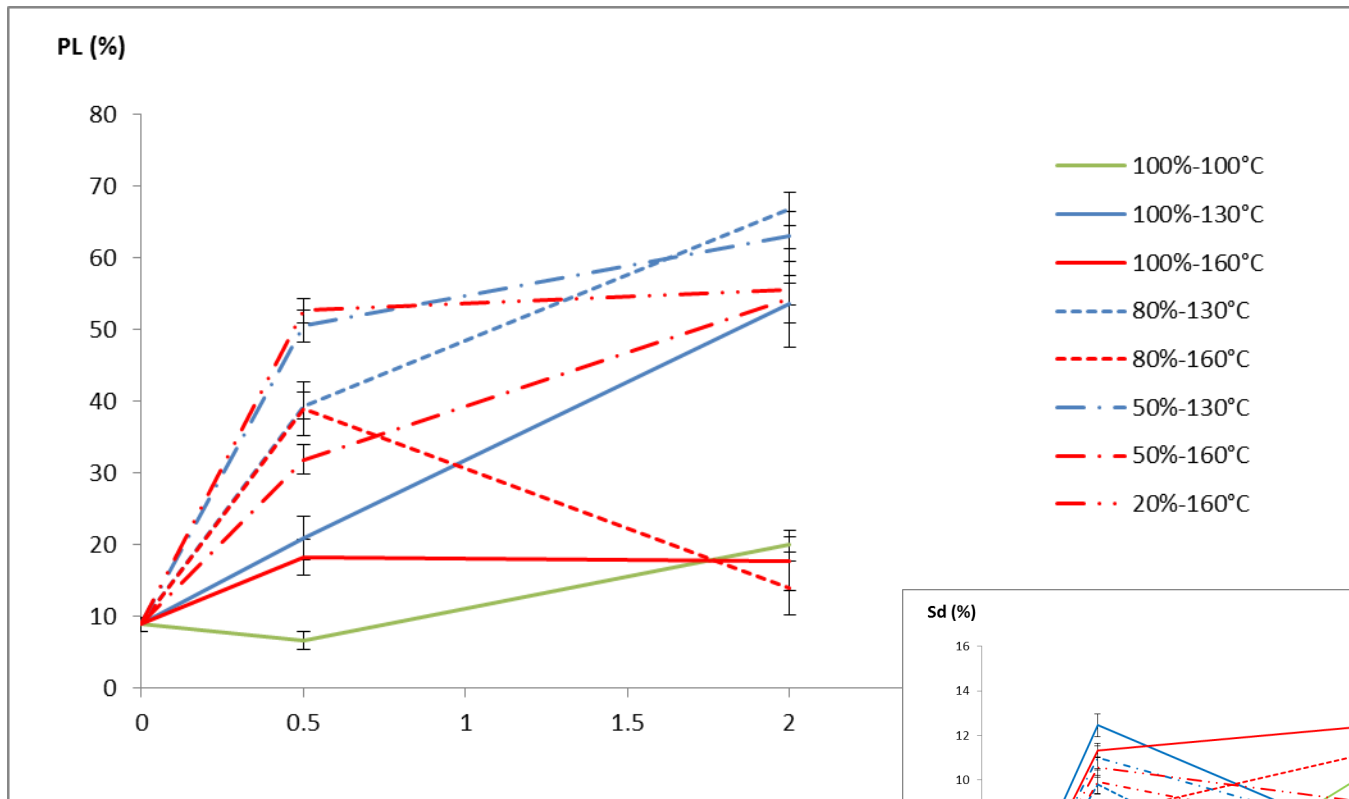
# PBS diffusion according to HTT conditions



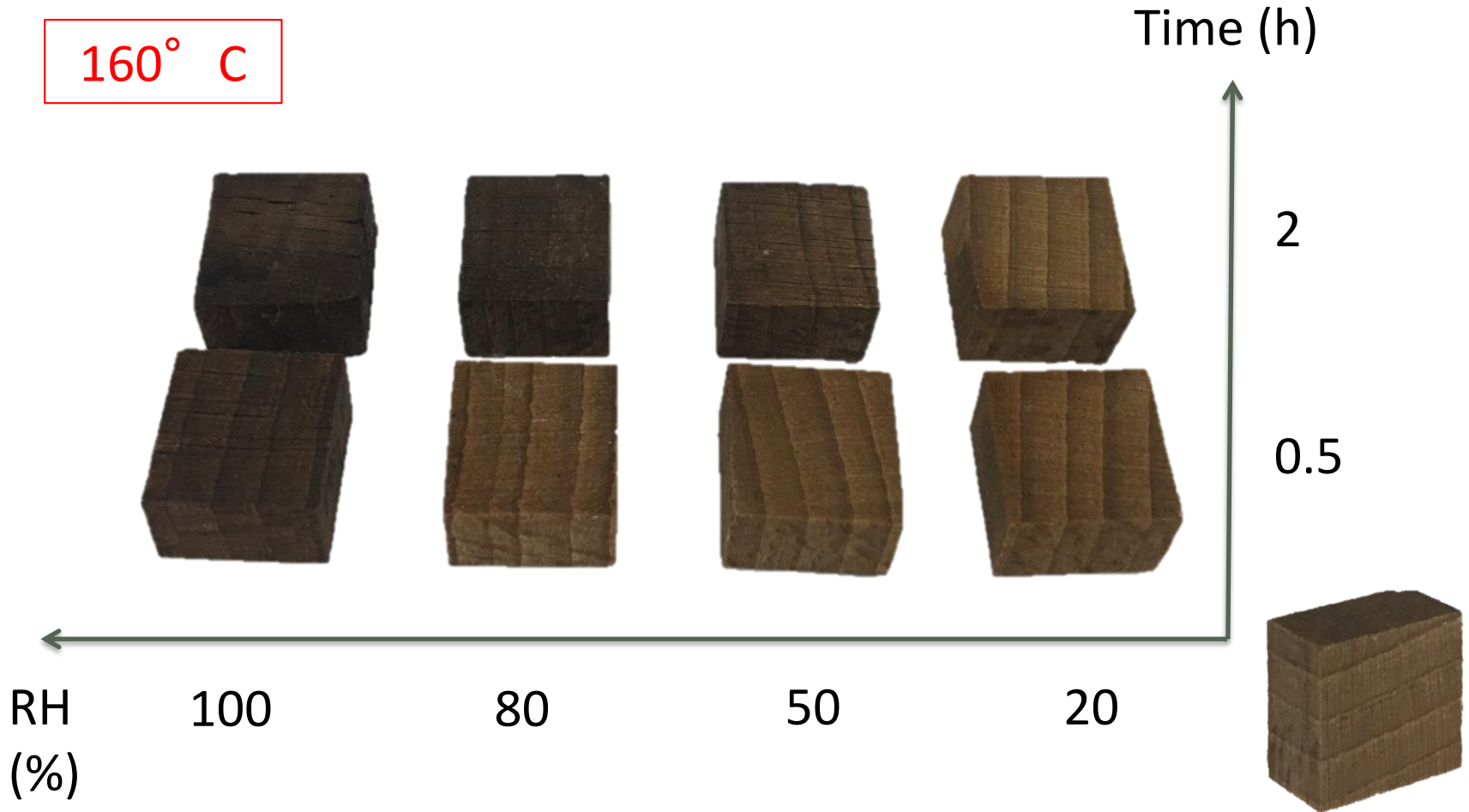
# Products flow in wood structure



# Products flow in wood structure



# Wood degradation





# Conclusion and Perspectives

- ▶ **Objective: OBS diffusion into wood structure**
  - ▶ Effective diffusion of OBS into wood structure after HTT
    - ▶ Short HTT → better diffusion with higher temperature
    - ▶ Long HTT → no global tendency. Volumetric variations during process must be due to a combination of phenomena (diffusion/extraction of OBS, wood degradation...)
  - ▶ On going experiments
    - ▶ Anti-Swelling Efficiency (repeated cycles)
    - ▶ Product persistence
    - ▶ Extracted oligomers DP
- ▶ Perspectives
  - ▶ Post-treatment temperature and duration
  - ▶ low temperature/long time VS short time/high temperature

# Acknowledgement

- ▶ The authors would like to thank the Swiss body of the COST office for this project funding .
- ▶ Aalto University, Pr. Lauri RAUTKARI



*Thank you  
for your attention!*

