



# STORAGE-INDUCED LOSS IN THE DISINTEGRATION CAPABILITIES OF CELLULOSIC NONWOVEN MATERIALS

Thomas Harter and Ulrich Hirn  
Graz University of Technology

The 6th International conference  
The Issues in Mechanics of Pulp and Paper Materials  
10.09.2021

# Agenda

- Introduction
- Materials
- Methods
- Results
- Conclusion



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# Aim of the work



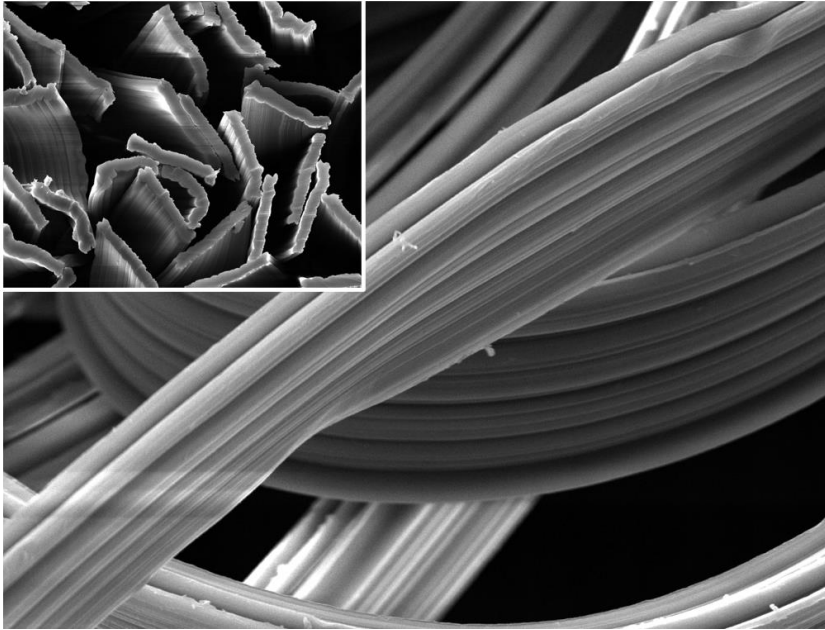
- Nonwovens used to produce wet wipes
- Wet wipe accumulate in sewer
- Cloggings in big cities
- Role of wet wipes?

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# Materials



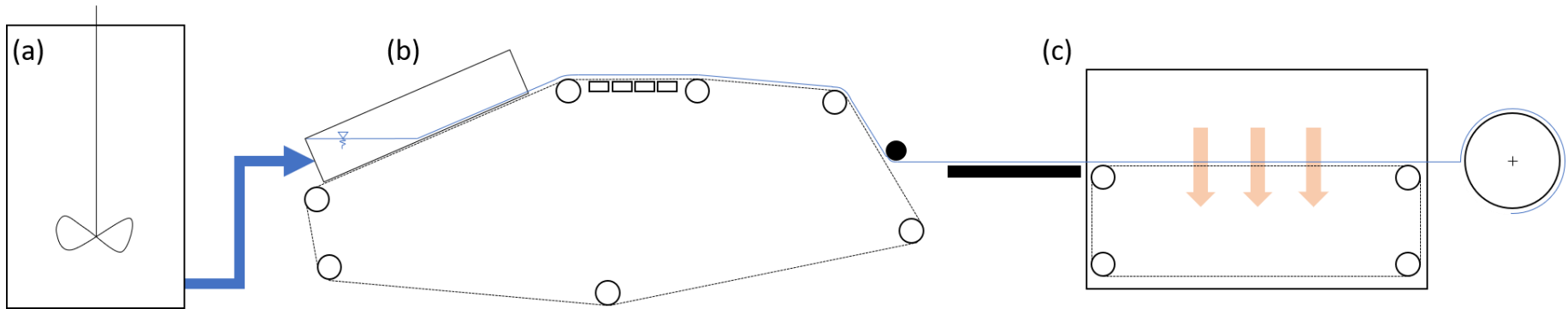
- Viscose fibres
- Wood pulp (different grades)
- No additives
- No binder

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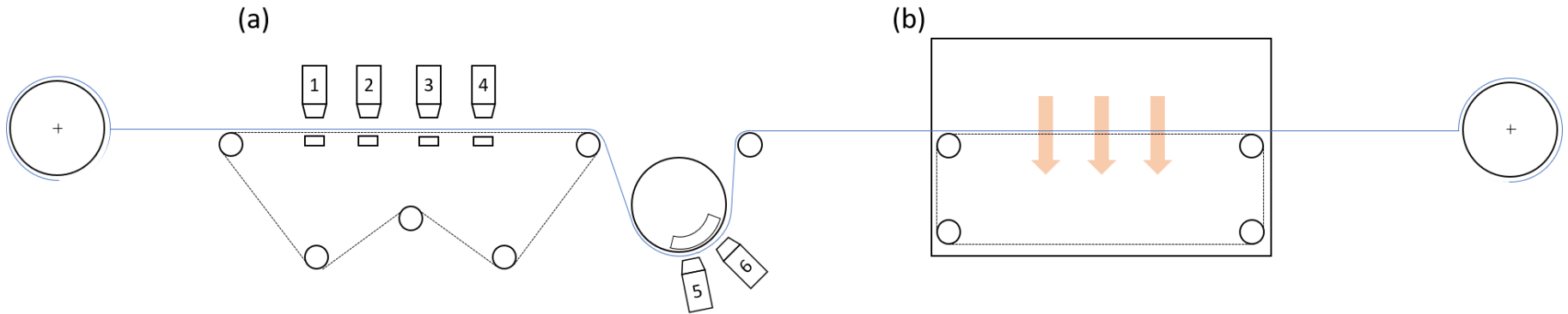
# Nonwoven Production - Wetlaid



- Mixing chest with 1000 l
- Inclined wire paper machine in pilot-scale
- Hot-air drying
- Winding



# Nonwoven Production - Hydroentanglement



- Unwinding
- 4 sets of water jet bars for top side
- 2 sets of water jet bars for bottom side
- Hot-air drying
- Winding

# Nonwoven Production



# Dispersibility measurement

- Industrial guideline for testing
- Reproduction of sewage system
- Box filled with water
- Box tilted for defined time



0 min

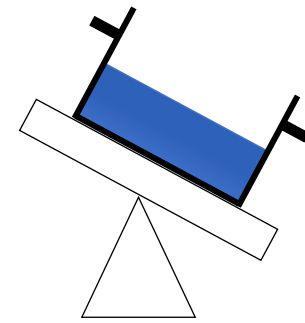
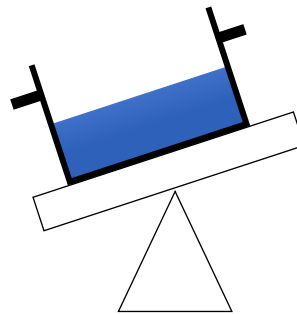
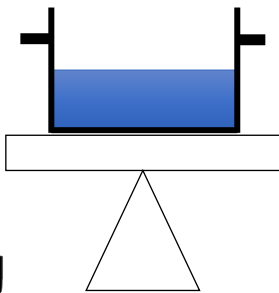
15 min

40 min

60 min

120 min

180 min



# Dispersibility measurement



- 30 minutes in slosh box
- Two stacked sieves
- Remains dried and weighed

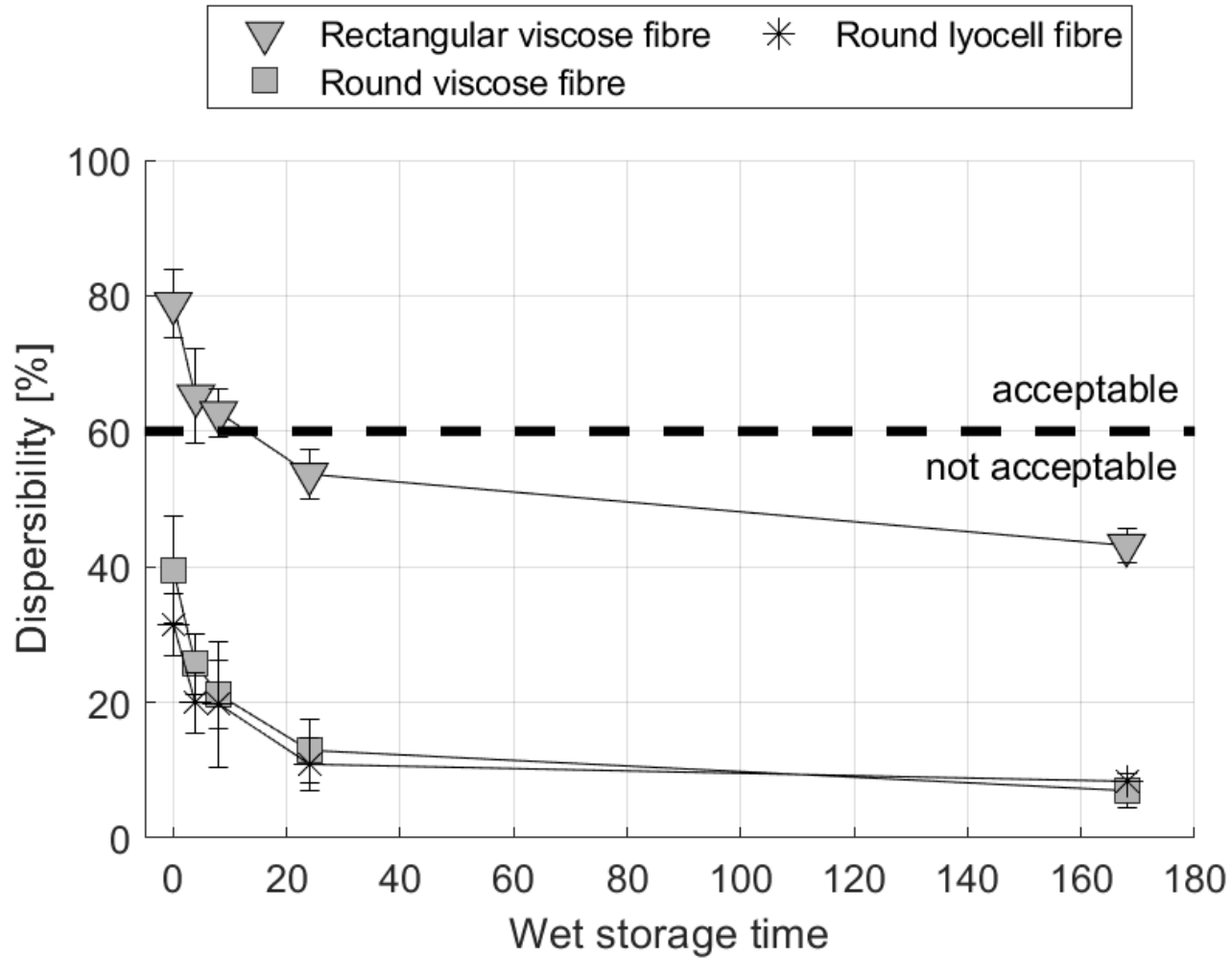
$$\text{Dispersibility} = \frac{m_{200\mu\text{m}}}{m_{200\mu\text{m}} + m_{12.5\text{mm}}}$$

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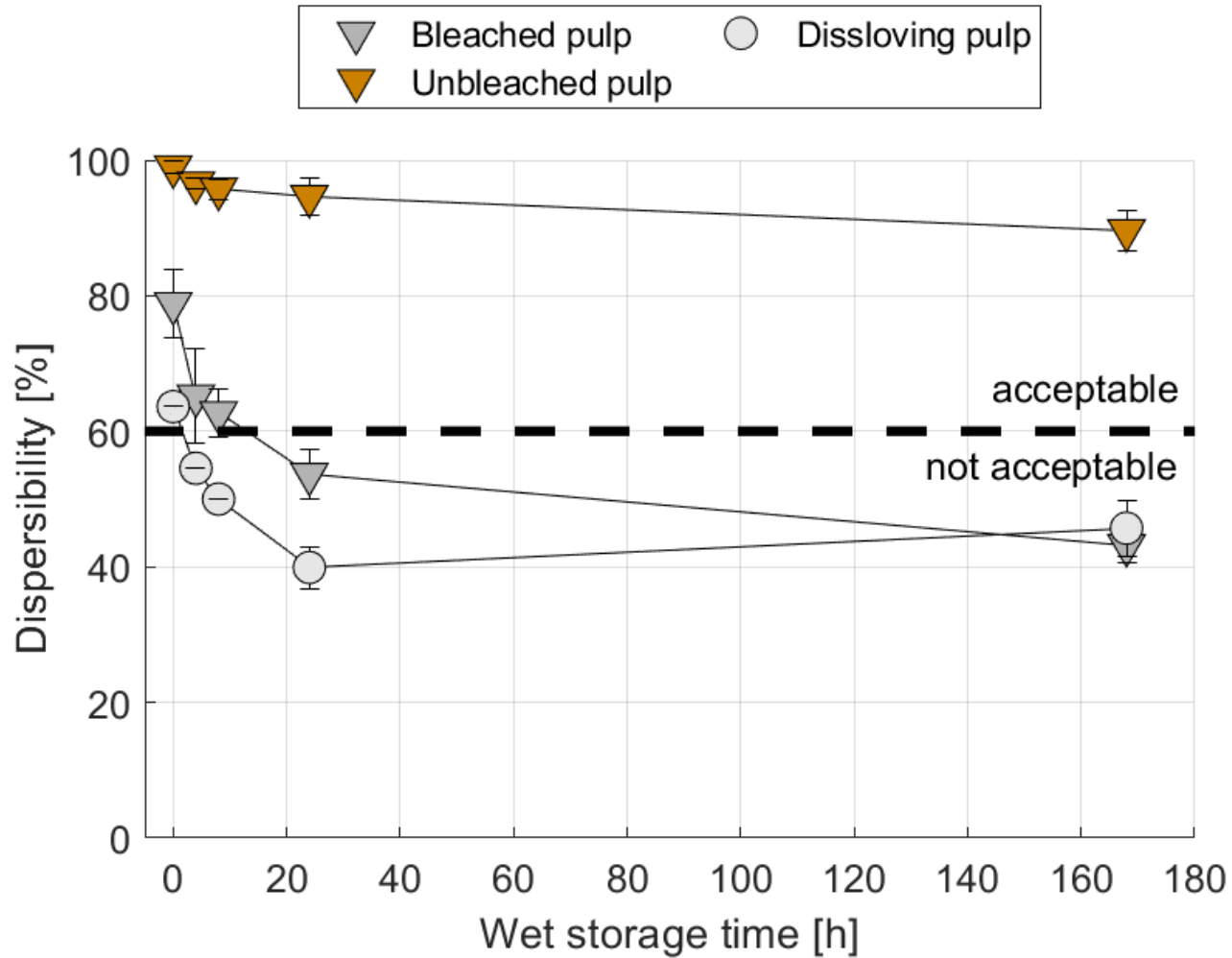


# Results





# Results



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# Conclusion

- Dispersibility can be adjusted by material blend
- Most of the wipes show good dispersibility when tested dry
- Nonwovens lose dispersibility over wet storage time
- Unbleached pulp shows beneficial behaviour





# Спасибо за внимание!

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