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Influence of heating rate on the solid yield of biomass pyrolysis

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Outline

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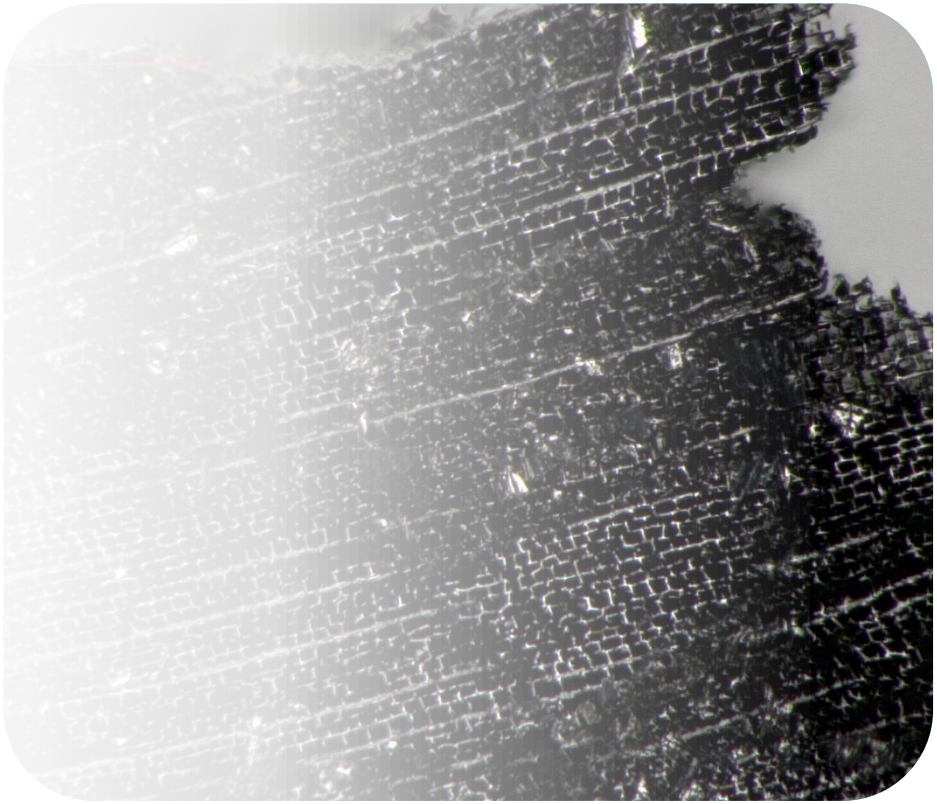
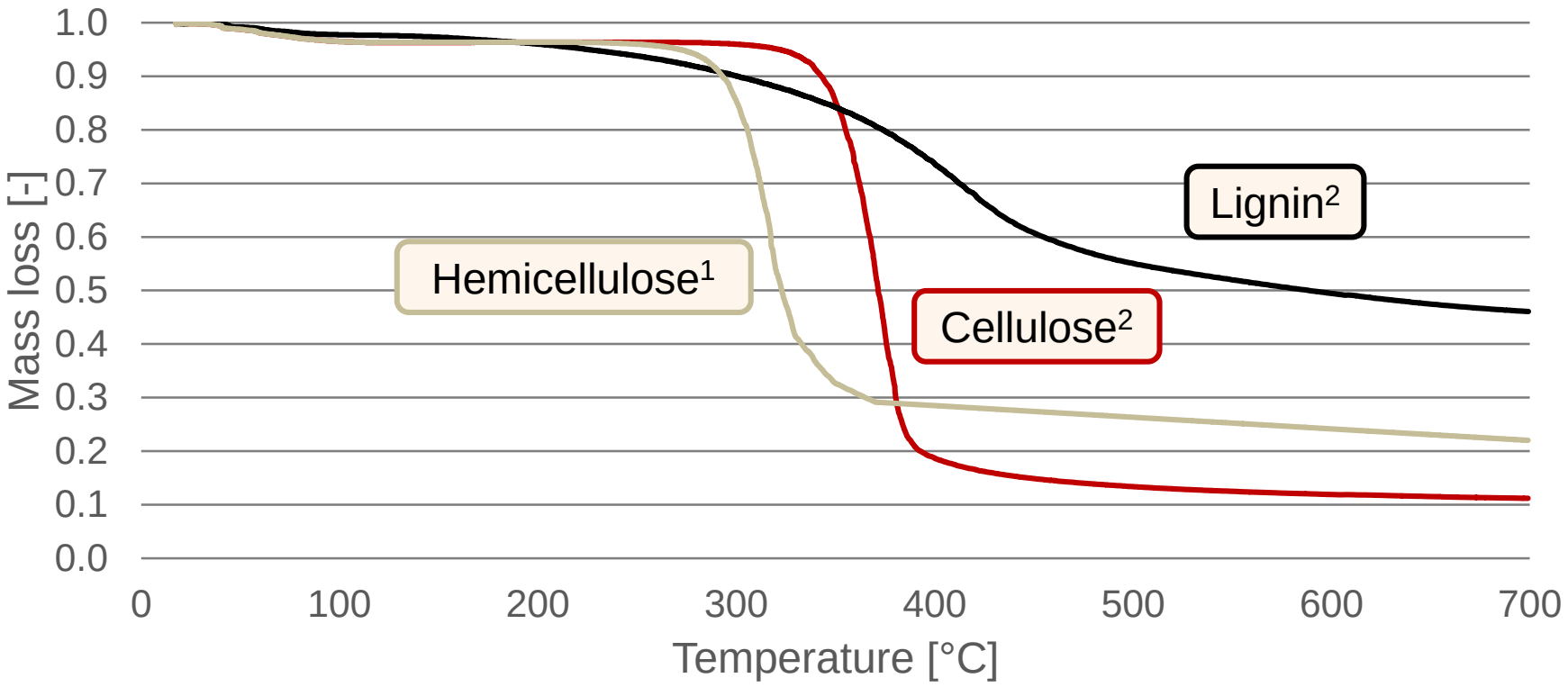
    3. Spruce trunk wood
4. **Conclusion**



Motivation

Motivation

Devolatilization of biomass components



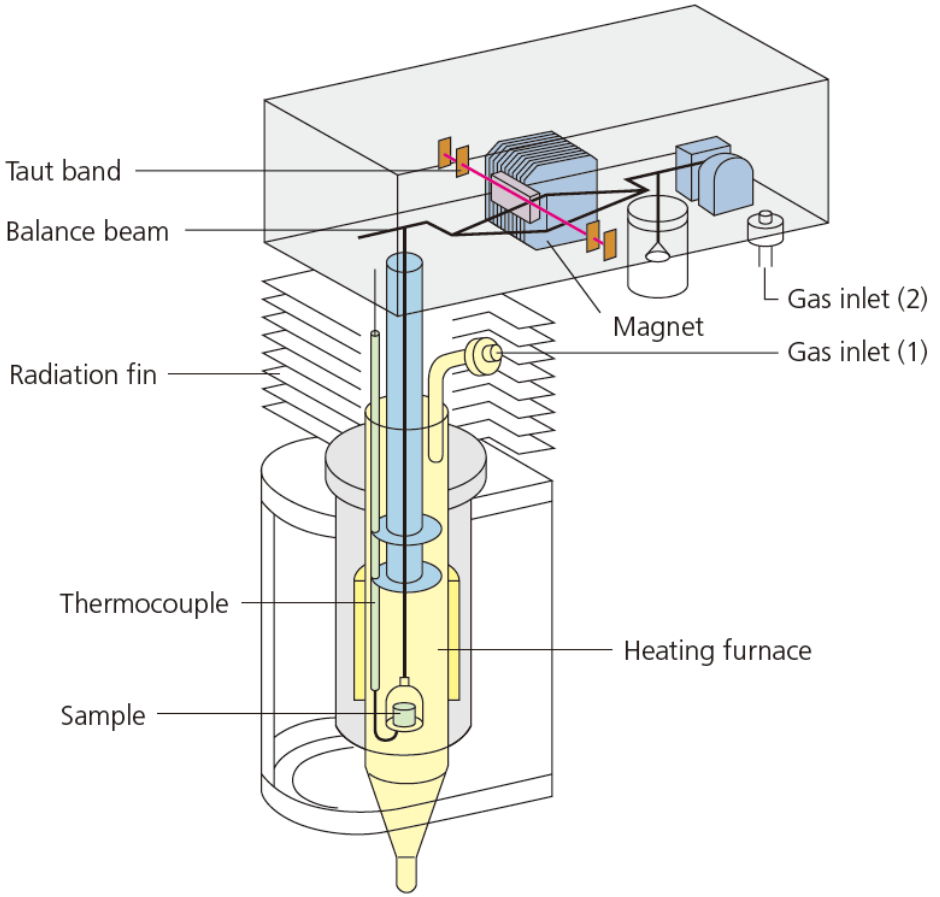
[1] estimated curve shape in accordance with the literature (Ranzi, 2008, and Kaltschmitt, 2016)
[2] own results during the following investigation (with a heating rate of 10 K/min)

Approach

Approach

Experimental setup

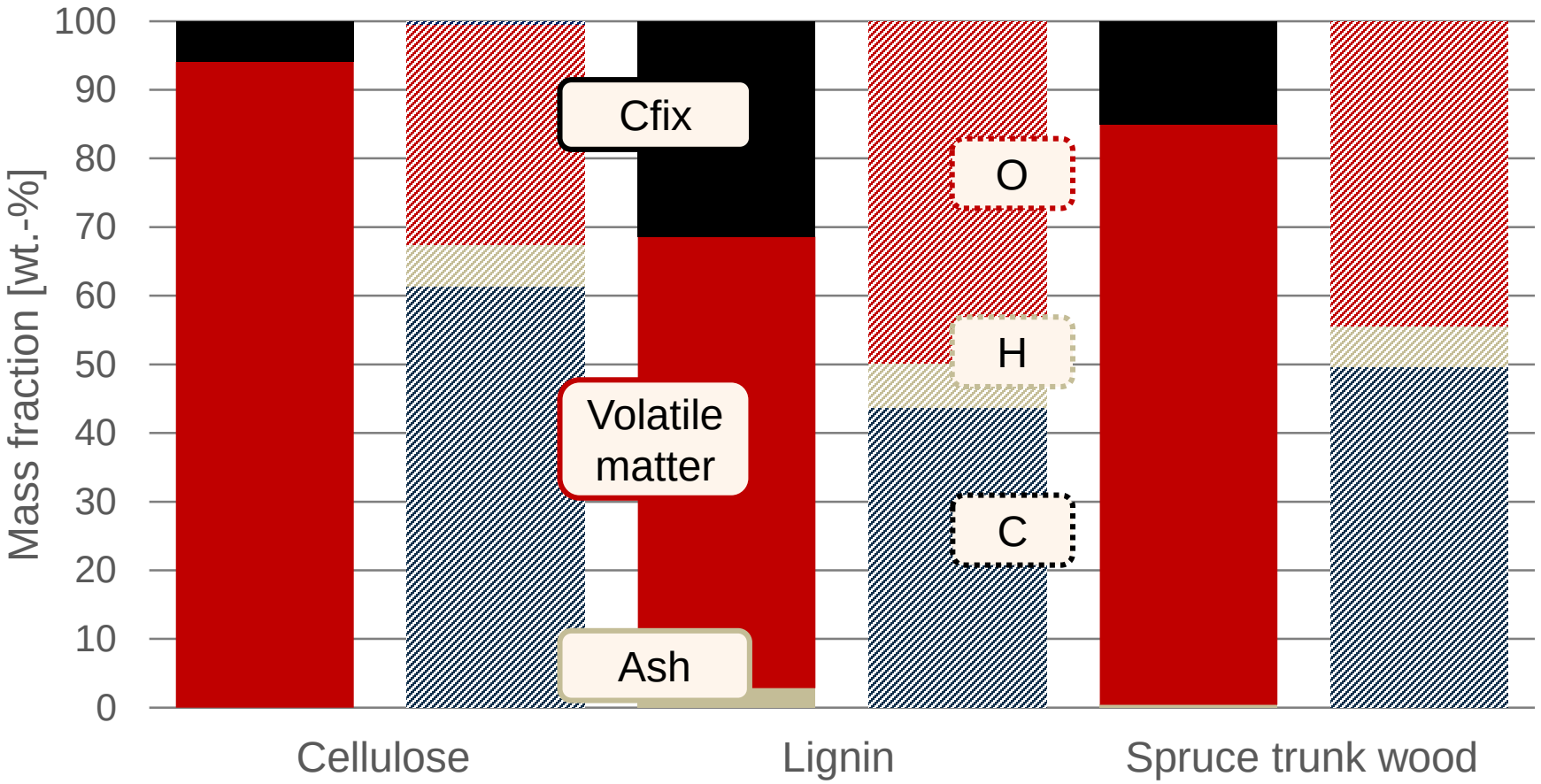
Thermogravimetric analyzer (TGA)	Shimadzu TGA-50
Feedstocks	**Cellulose** (microcrystalline)
	Lignin (alkali)
	Spruce trunk wood
Temperature range	**450 to 700 °C**
Heating rates	**1, 5, 10, 30, 50 K/min**
Sample gas	**Nitrogen**
Residence time	**10 min**



Reference: Shimadzu

Approach

Feedstock

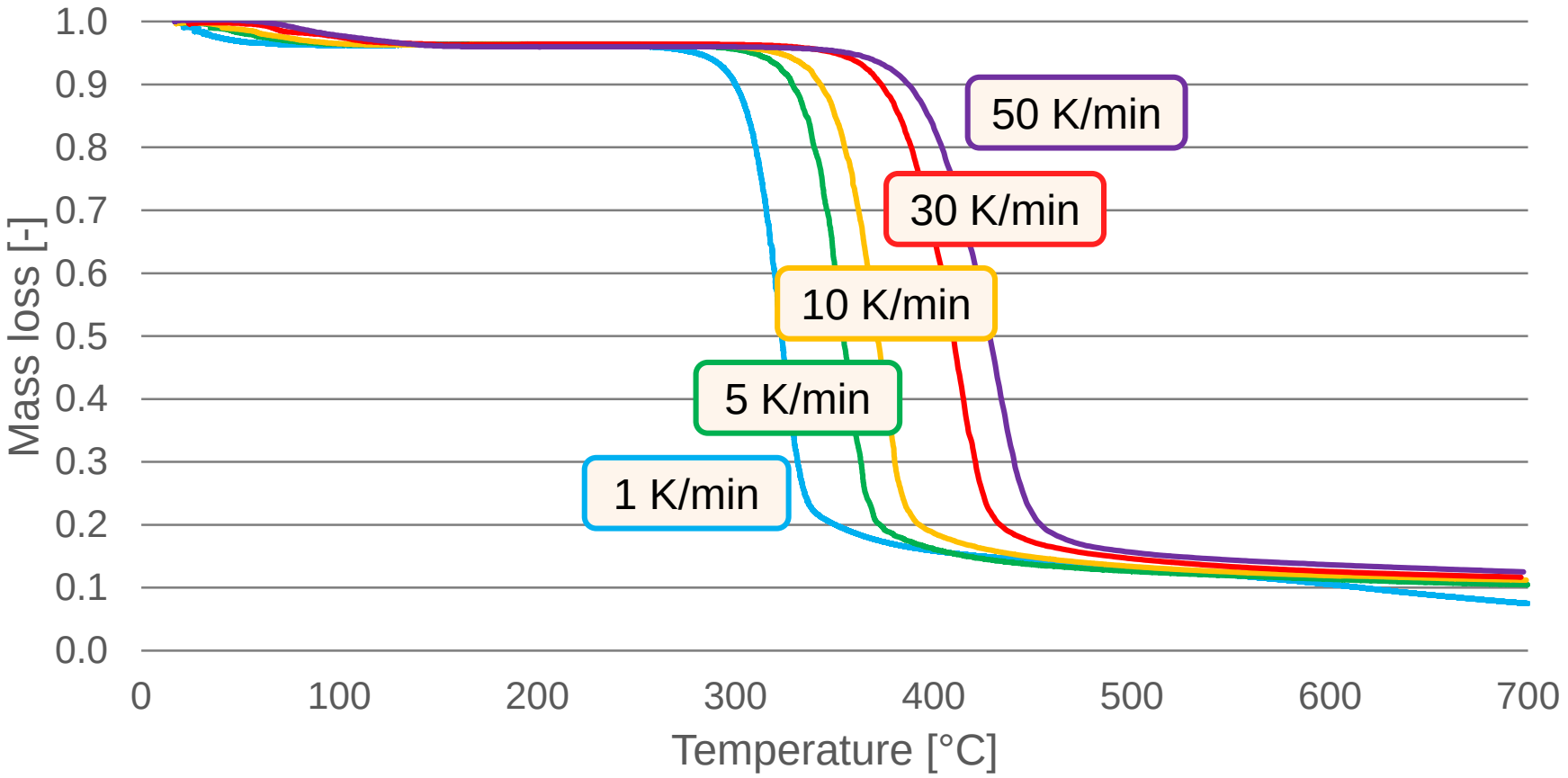


Results

Cellulose

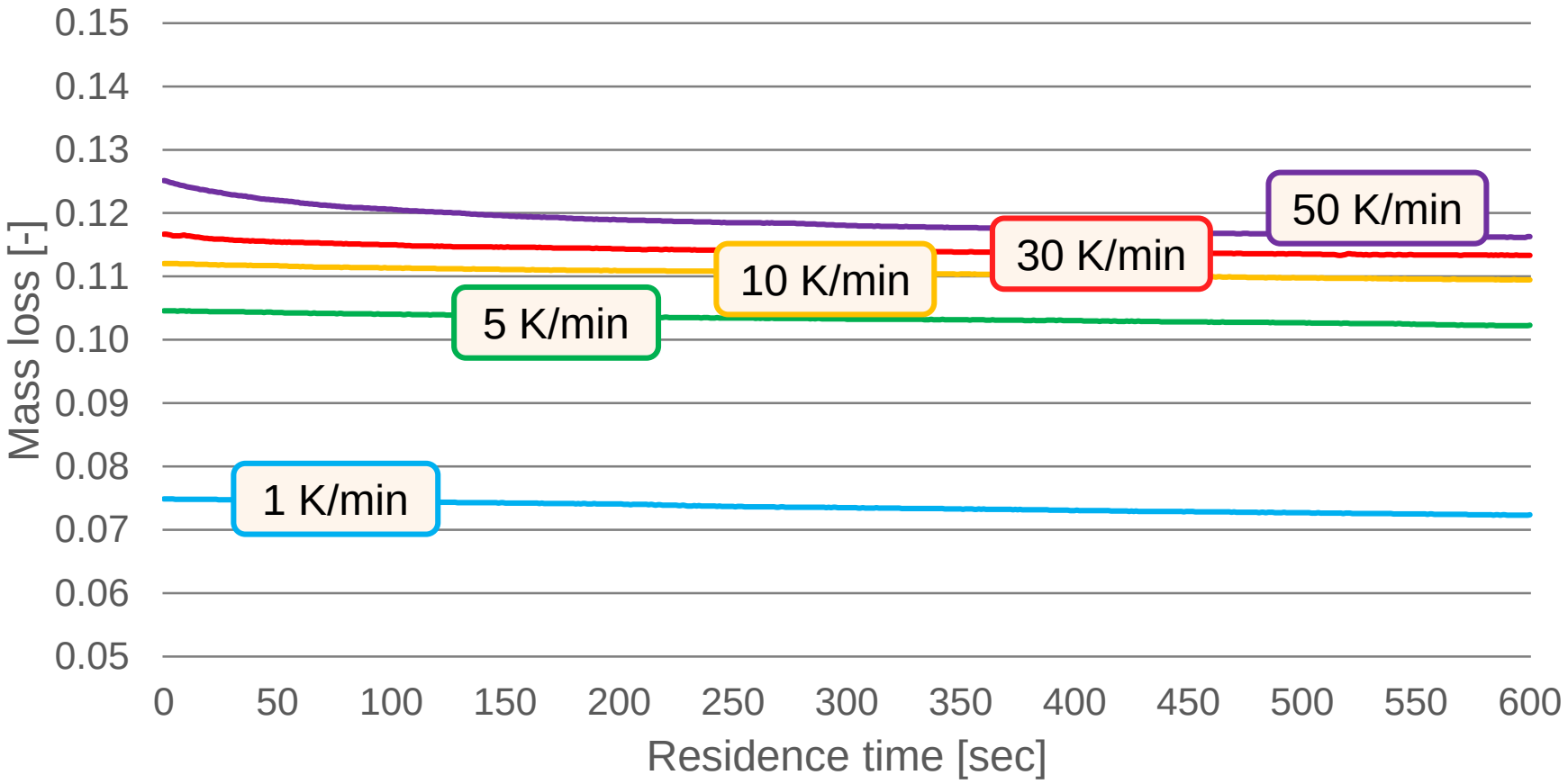
Results – Cellulose

Mass loss of cellulose



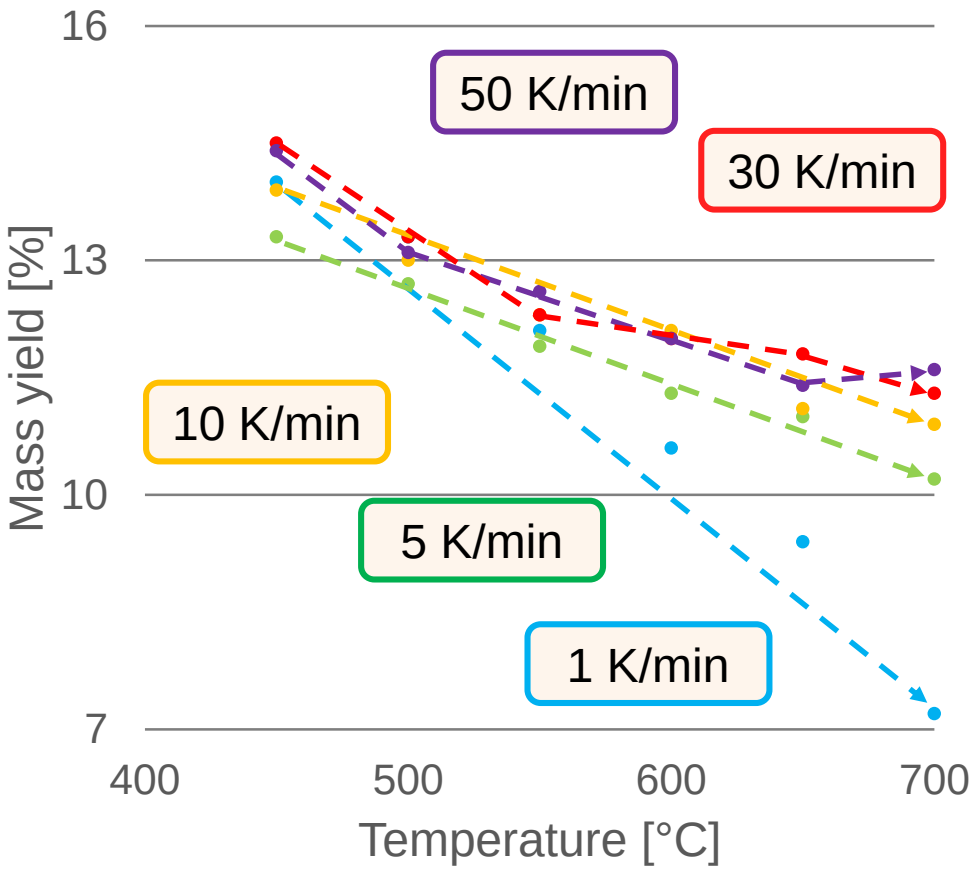
Results – Cellulose

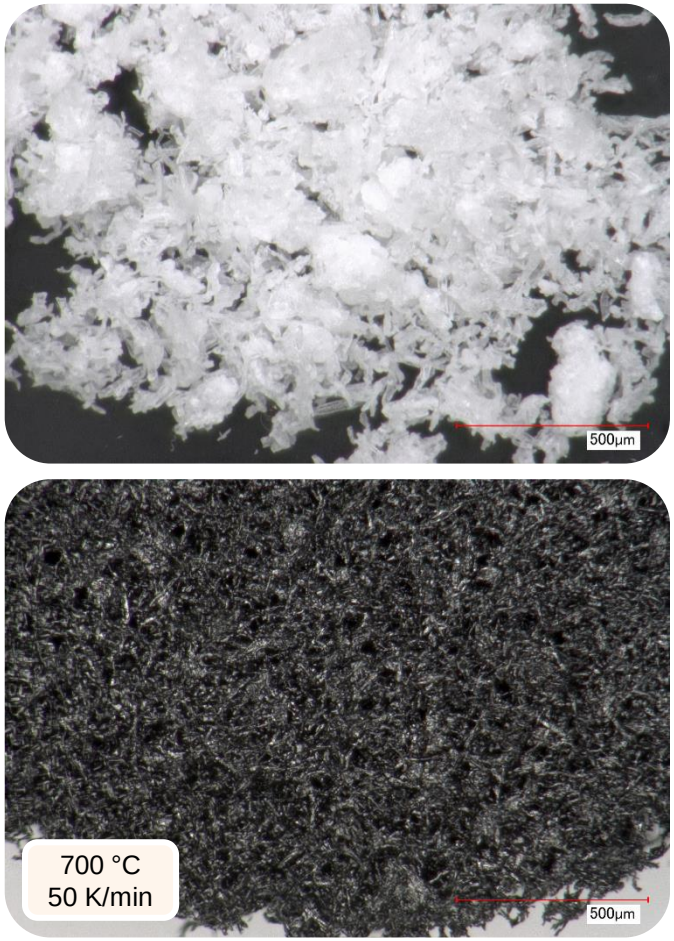
Mass loss of cellulose



Results – Cellulose

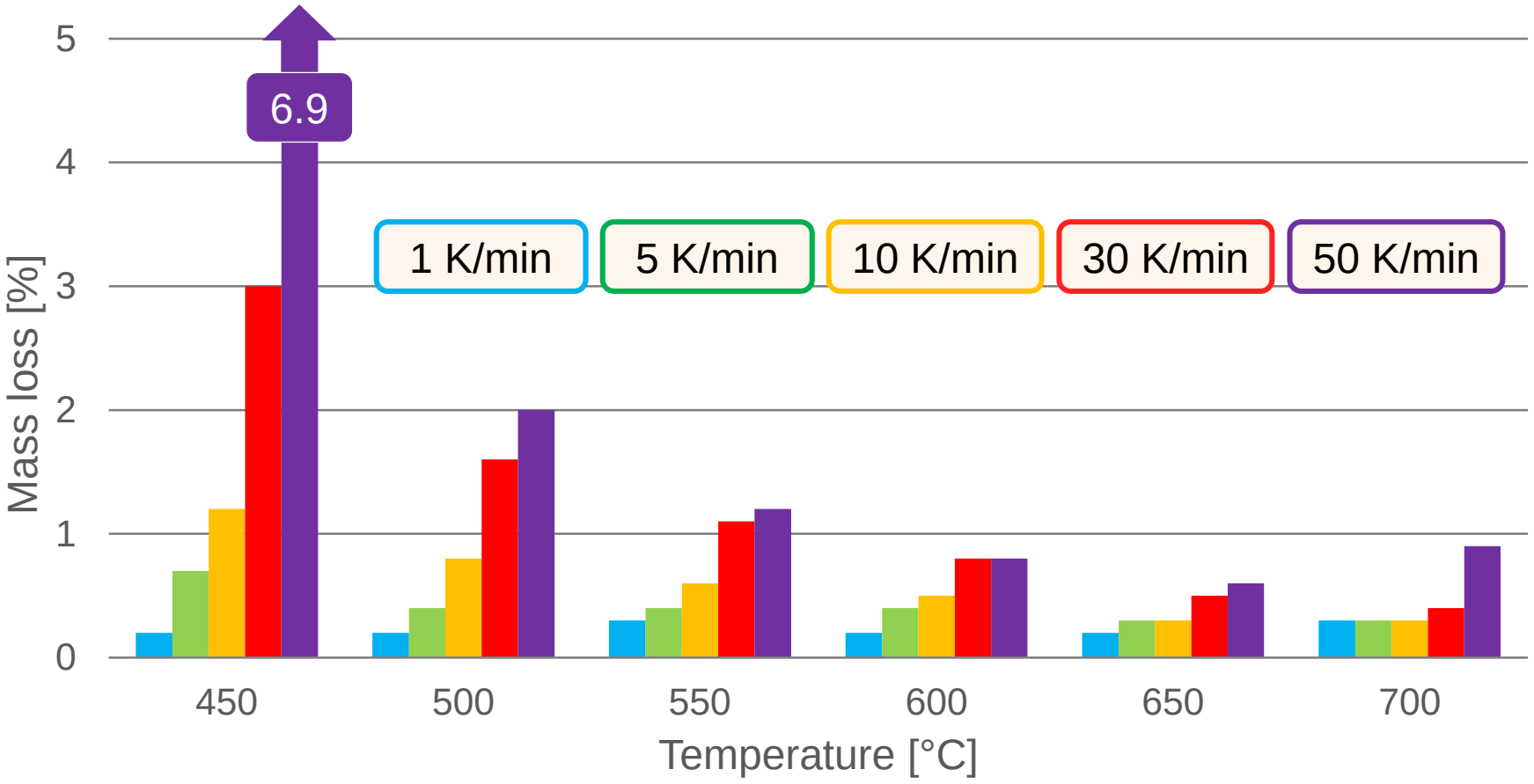
Influence of heating rate on mass yield





Results – Cellulose

Influence of residence time on mass yield

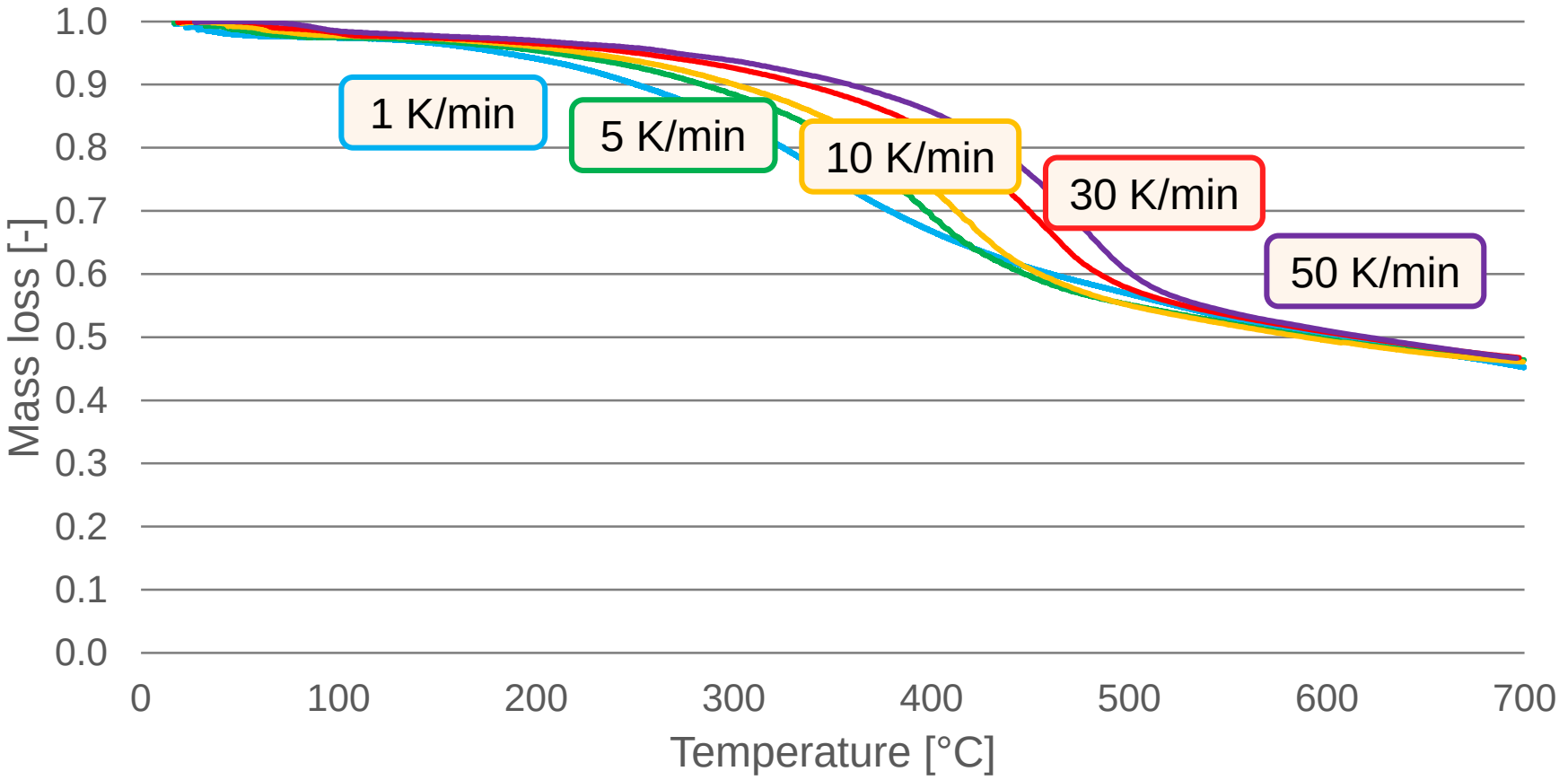


Results

Lignin

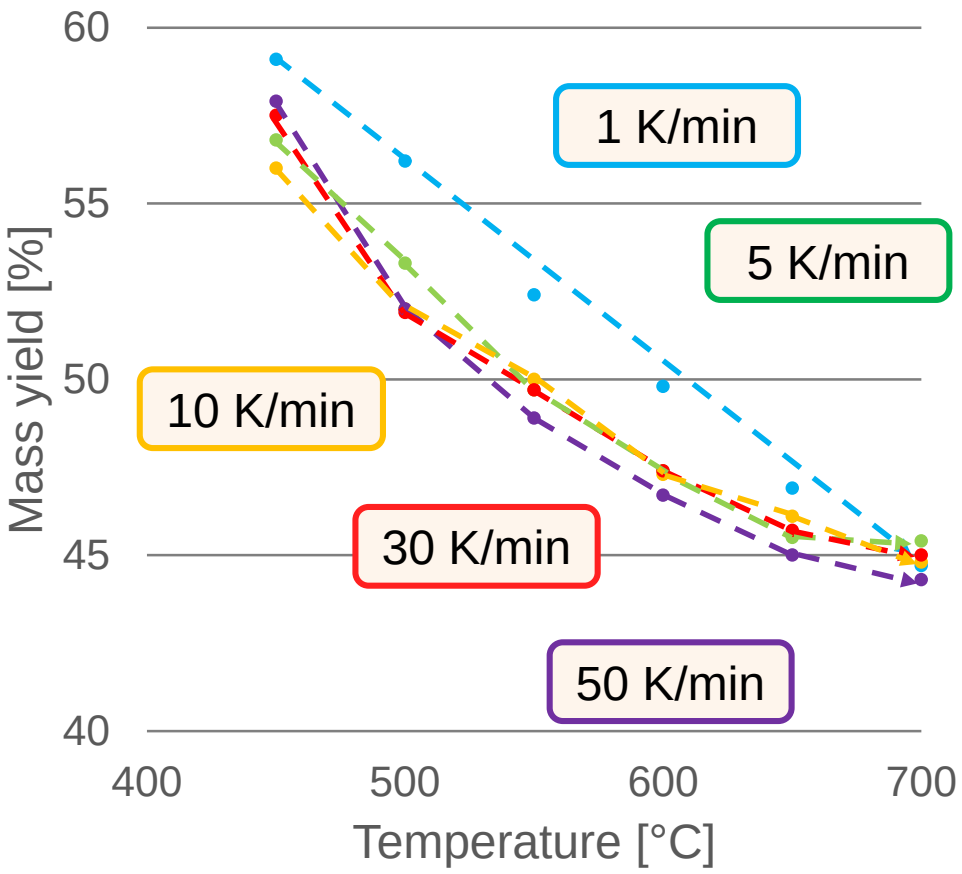
Results – Lignin

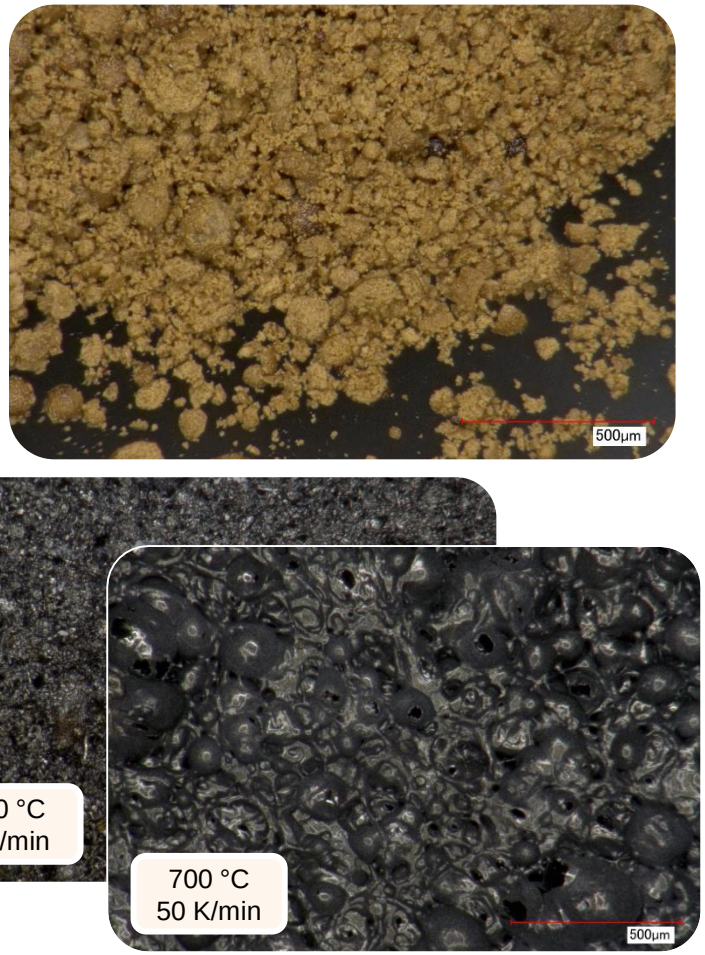
Mass loss of lignin



Results – Lignin

Influence of heating rate on mass yield



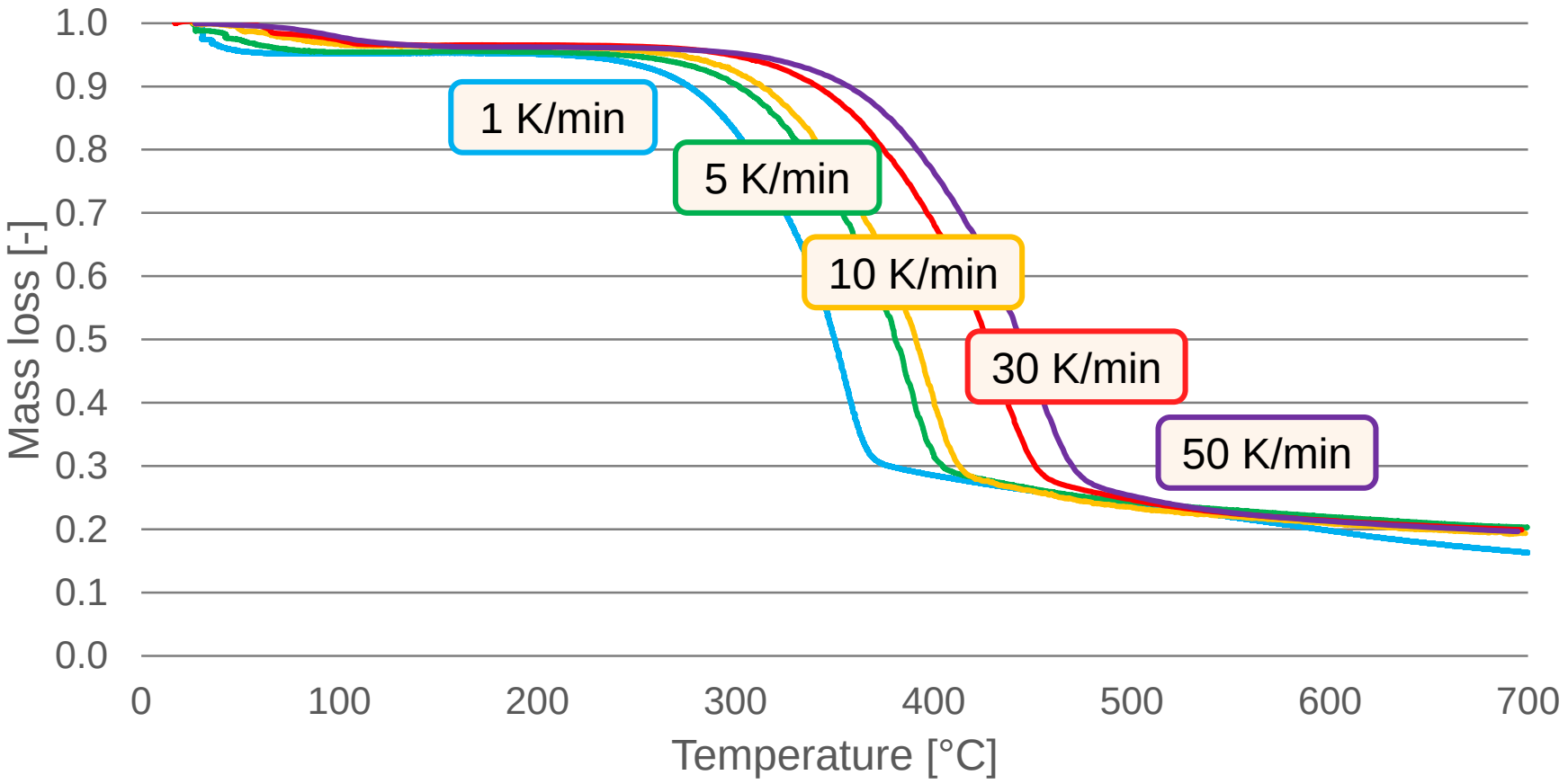


Results

Spruce trunk wood

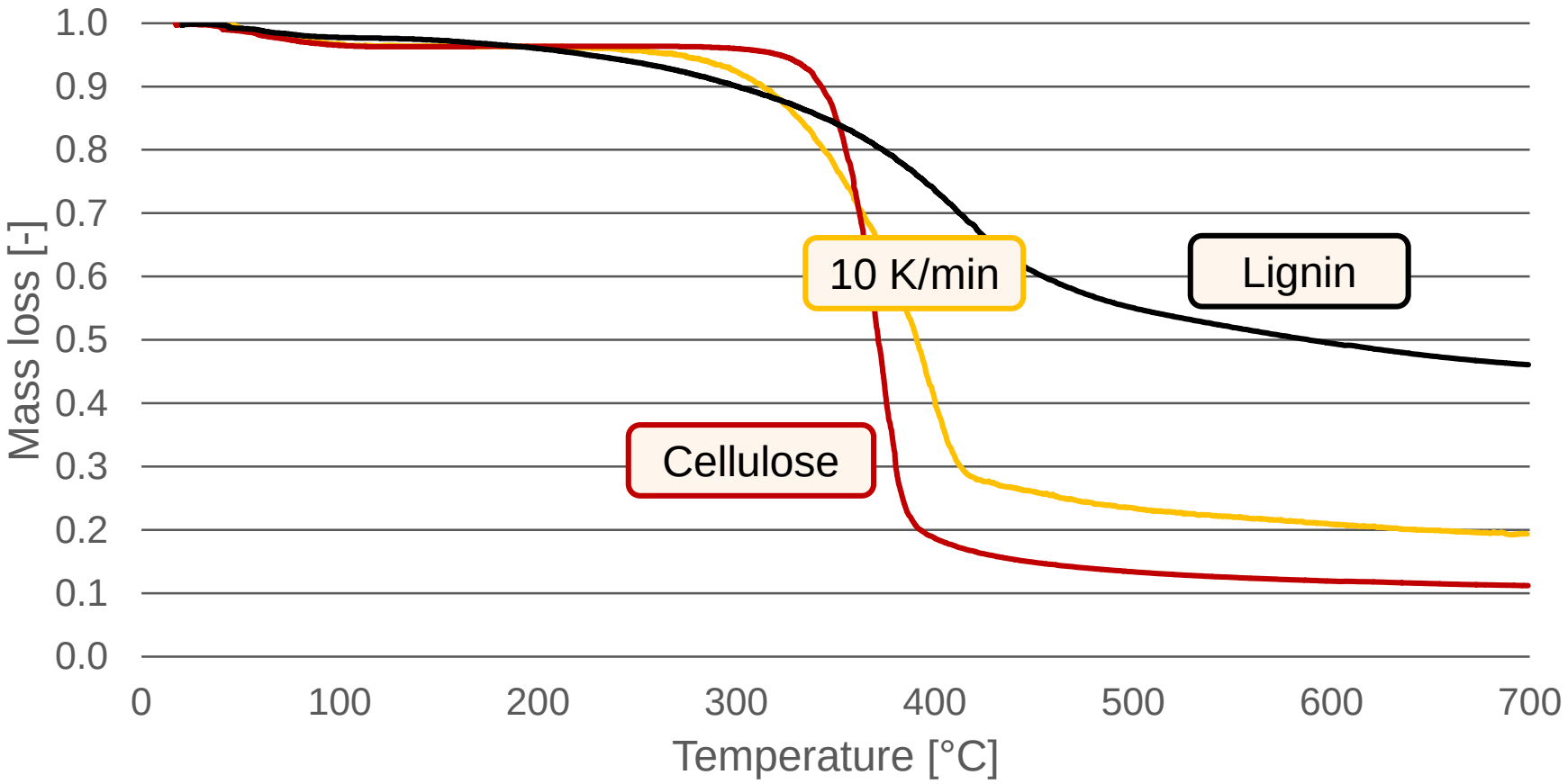
Results – Spruce trunk wood

Mass loss of spruce trunk wood



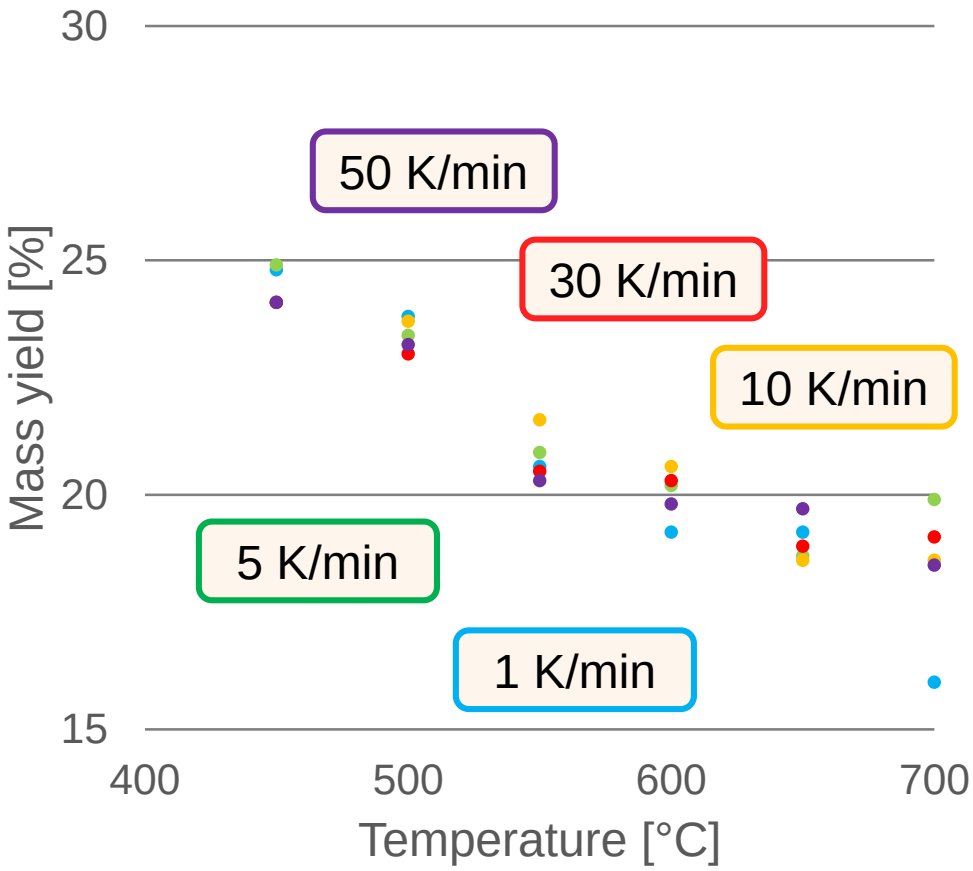
Results – Spruce trunk wood

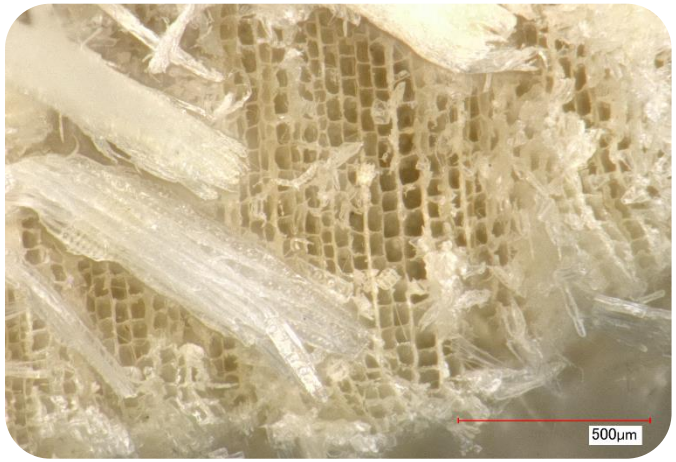
Mass loss of spruce trunk wood

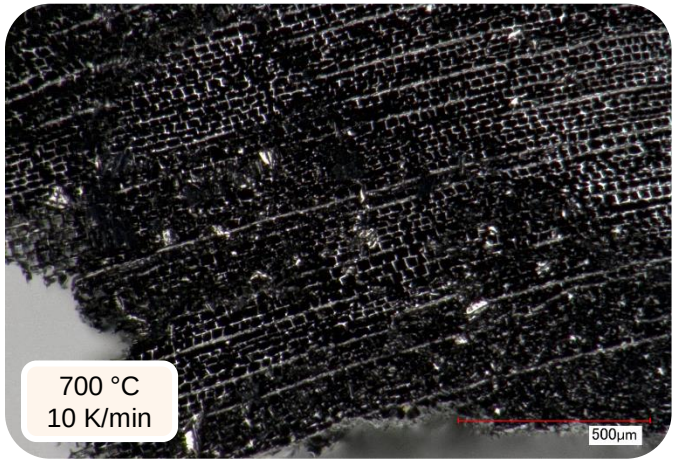


Results – Spruce trunk wood

Influence of heating rate on mass yield



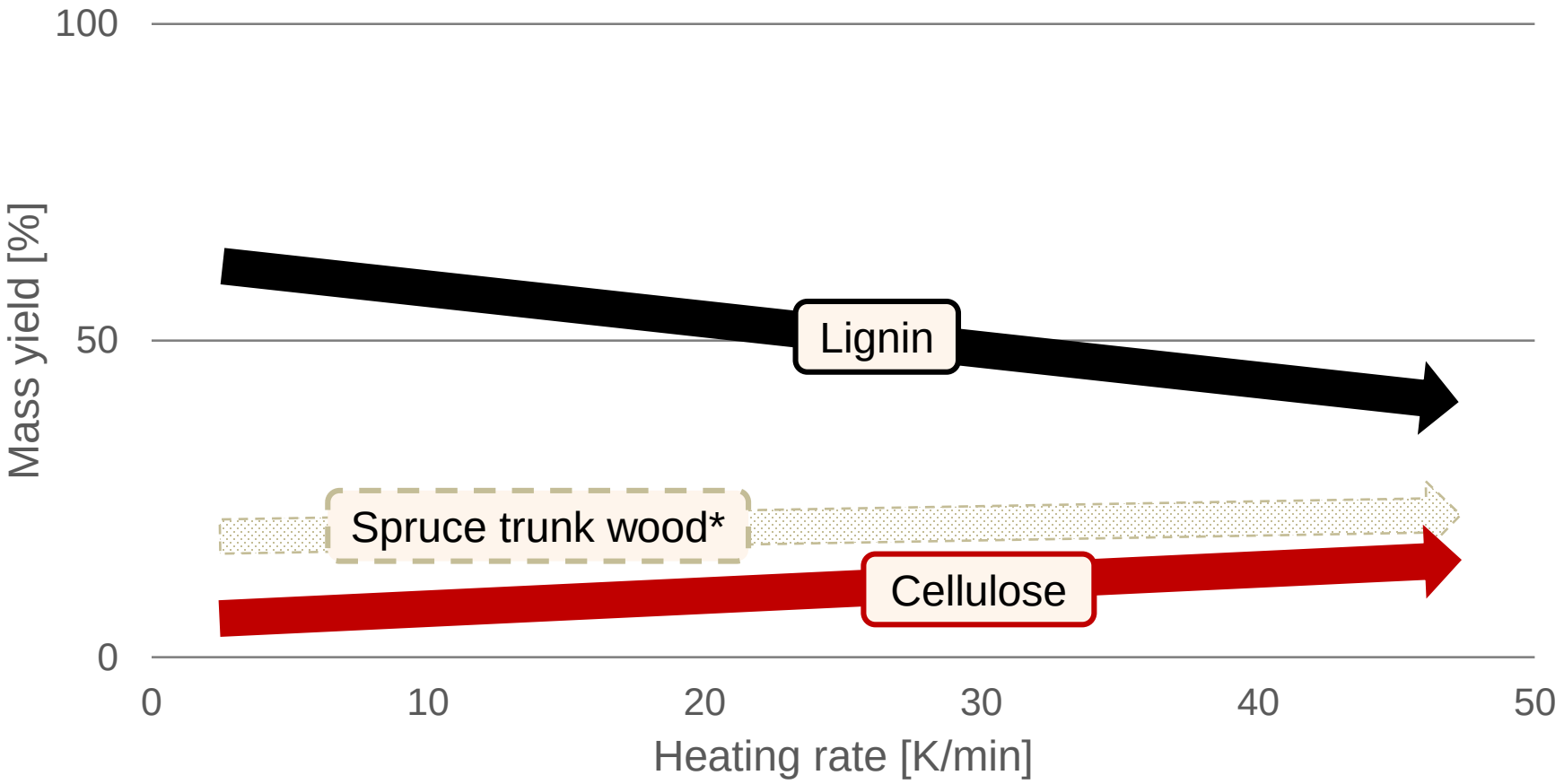




Conclusion

Conclusion

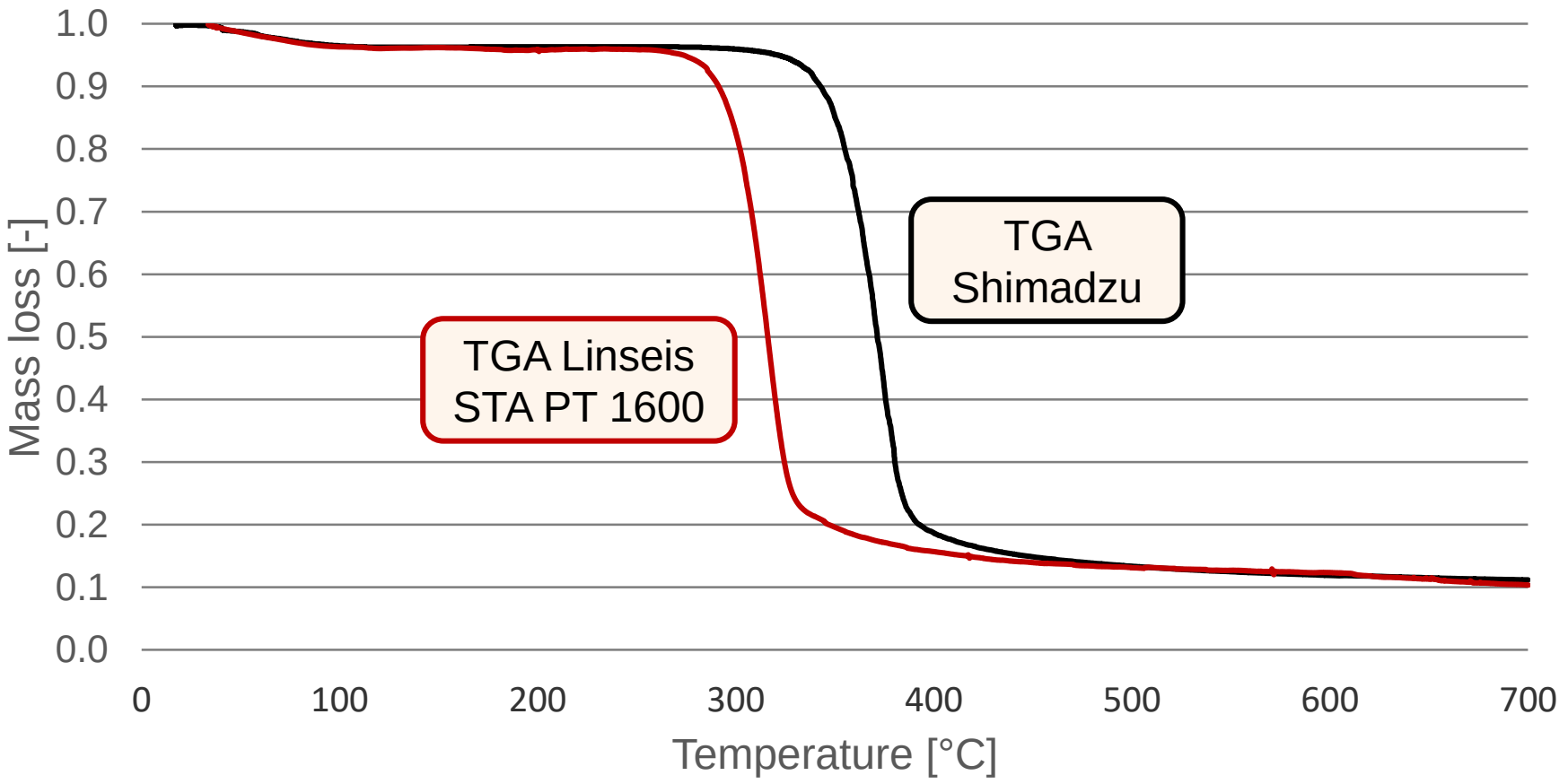
Effect of heating rate on char yield



* Only at higher temperatures than 600 °C

Conclusion

Comparison with another TG Analyzer



Acknowledgement

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Thank you for your attention!

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