

## MECHANICAL PRETREATMENT EFFECT ON CELLULOSE ENZYMATICAL HYDROLYSIS

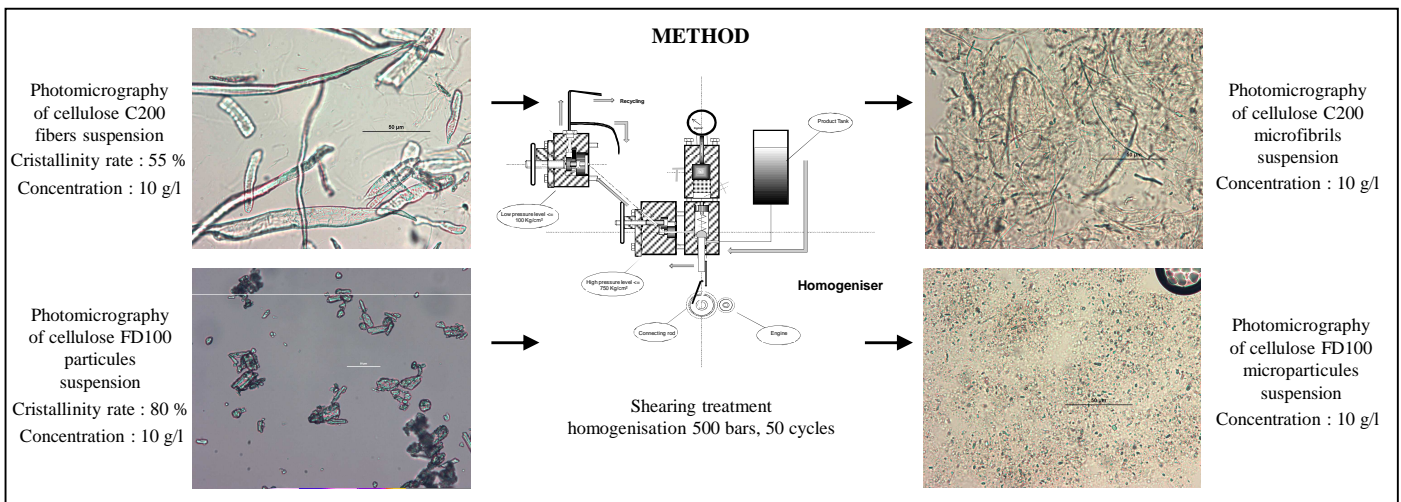
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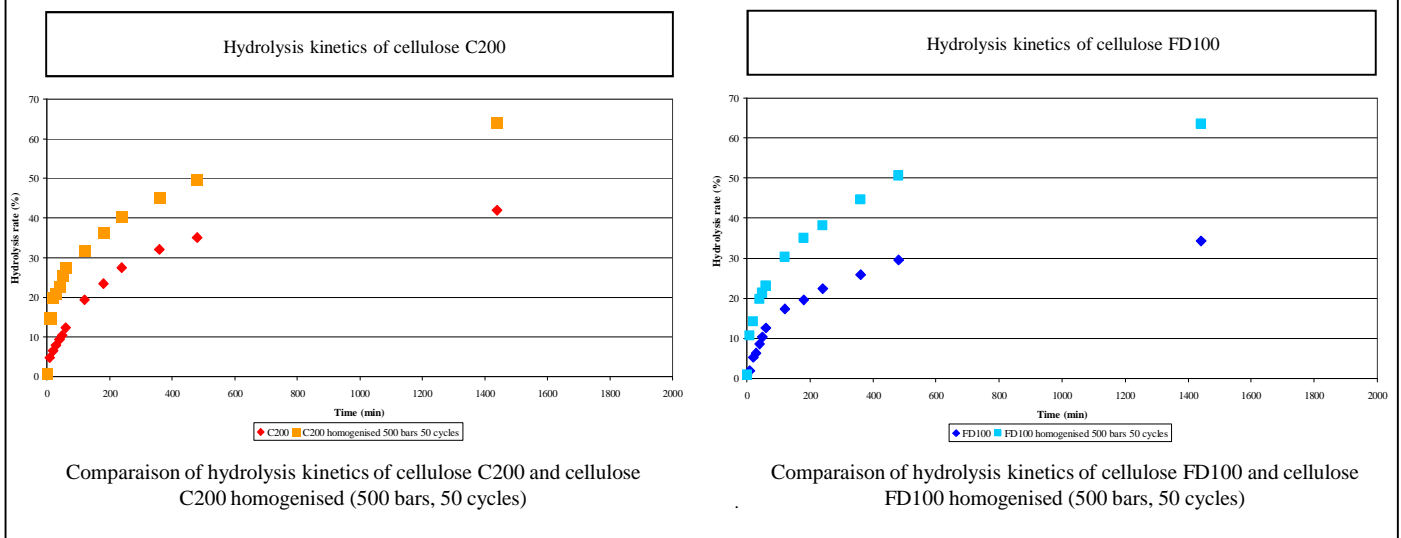
This study is a part of the research project « LignoFuel » DGTRE.

### ABSTRACT

**Lignocellulosic materials are very interesting for the production of bioethanol after chemical or enzymatical hydrolysis of cellulose. To optimise production rate and increase the output of these processes, different kinds of pre-treatments (grinding, steam explosion...) are often needed for opening the fibrous structure of the cellulose and increase the specific surface of the materials. The present study is focused on two models of “pure” cellulose (cellulose C200 microtechnik, cellulose FD100 FMC biopolymer) in order to analyse the effects of mechanical pretreatments on the kinetics and yields of hydrolysis. The cristallinity index differentiates the two celluloses. Hydrolysis is realized by a cellulase mix (cellulase *Trichoderma reesei* C2730, Novozyme; cellobiase *Aspergillus niger* C6105). Results present the influence of homogenisation pretreatment and analyse differents parameters of this technology.**



### RESULTS



### CONCLUSION

This study shows that mechanical shearing pretreatments have significant effects on the kinetics and yields of hydrolysis of cellulosic substrates. Results show that similar effects are observed for the two models of « pure » cellulose, homogenisation increasing the specific surface of the substrate and allowing an increase of the kinetics and the yields of hydrolysis.