

Valorization of side-products from biorefineries by integration of colloidal lignin particles for environmental applications



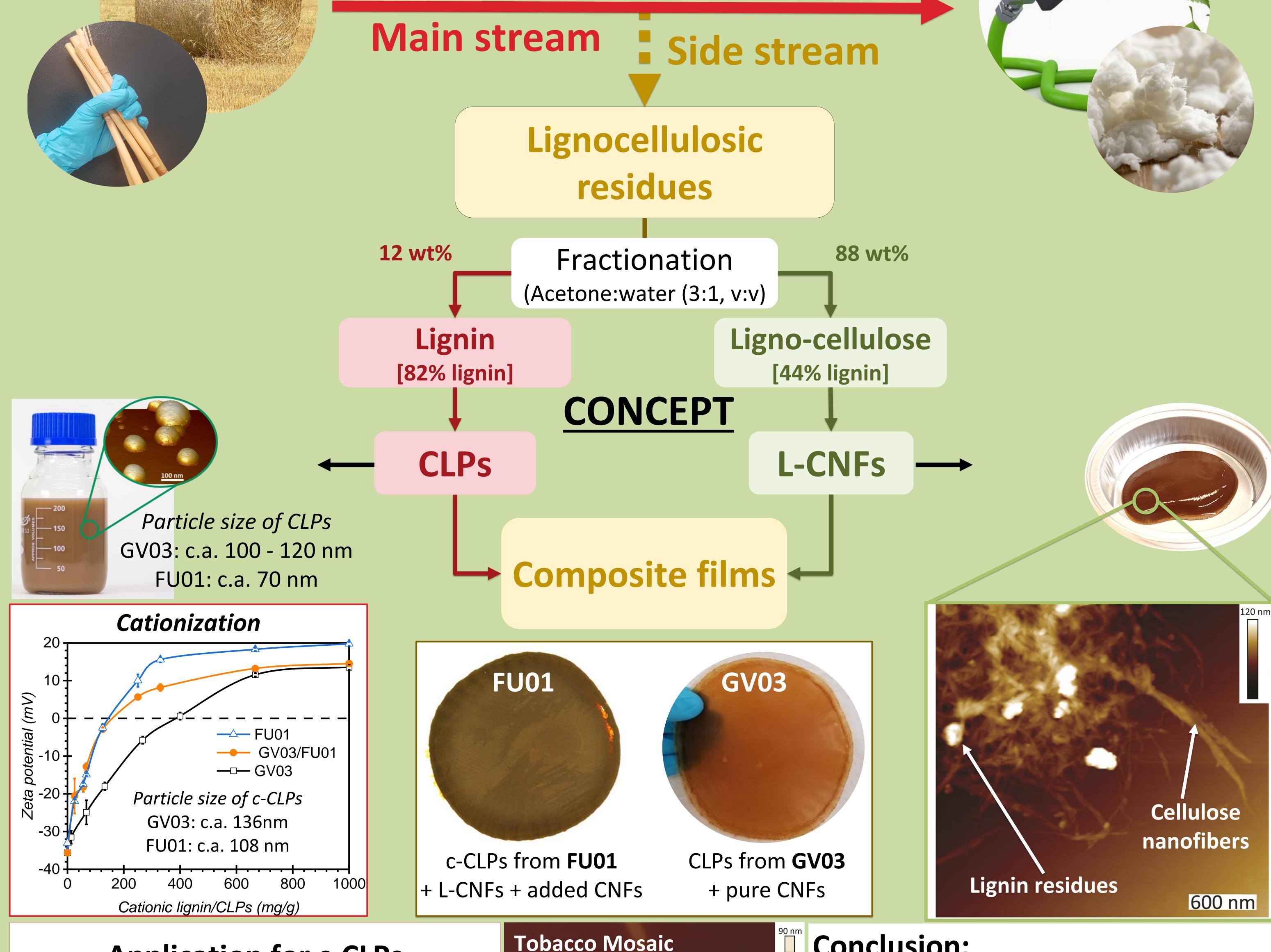
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Background: Lignocellulosic residues with high lignin content (as in GV03 with 89% lignin) can be directly valorized by transformation into colloidal lignin particles (CLPs). However, heterogeneous composition induces low CLP production (as in FU01, with 55% lignin).



Objective: Efficient use of the lignocellulosic residues from biorefinery (Futurol) following a zero-waste approach.



Application for c-CLPs

Tobacco Mosaic Viruses (TMVs)

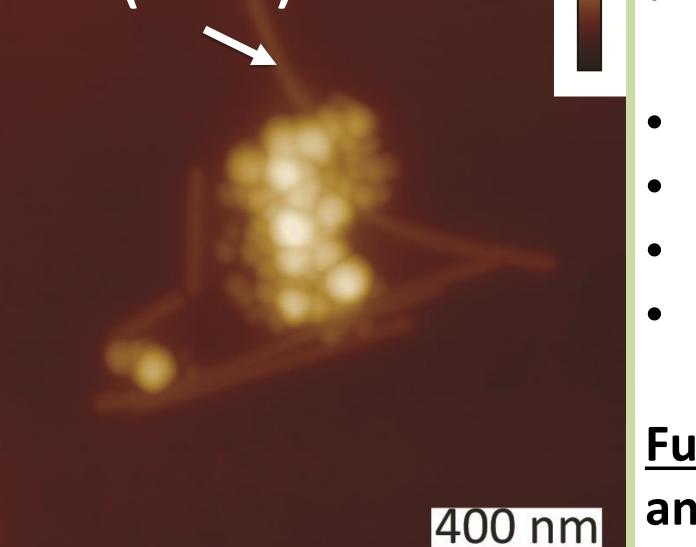
Conclusion:

Fractionation of FU01 provides 3 types of materials (CLPs, L-CNFs and composite films) Zero-waste approach

Virus removal for water purification

1.6 (c-CLP) : 1 (TMV)

70% removal with FU01 by filtration vs. 41% with GV03 at the same conc.



- **Smaller CLPs and c-CLPs**
- **Higher cationic charge**
- **Higher virus removal rate**

Future work: Further studies for L-CNFs as coating and for films for packaging





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