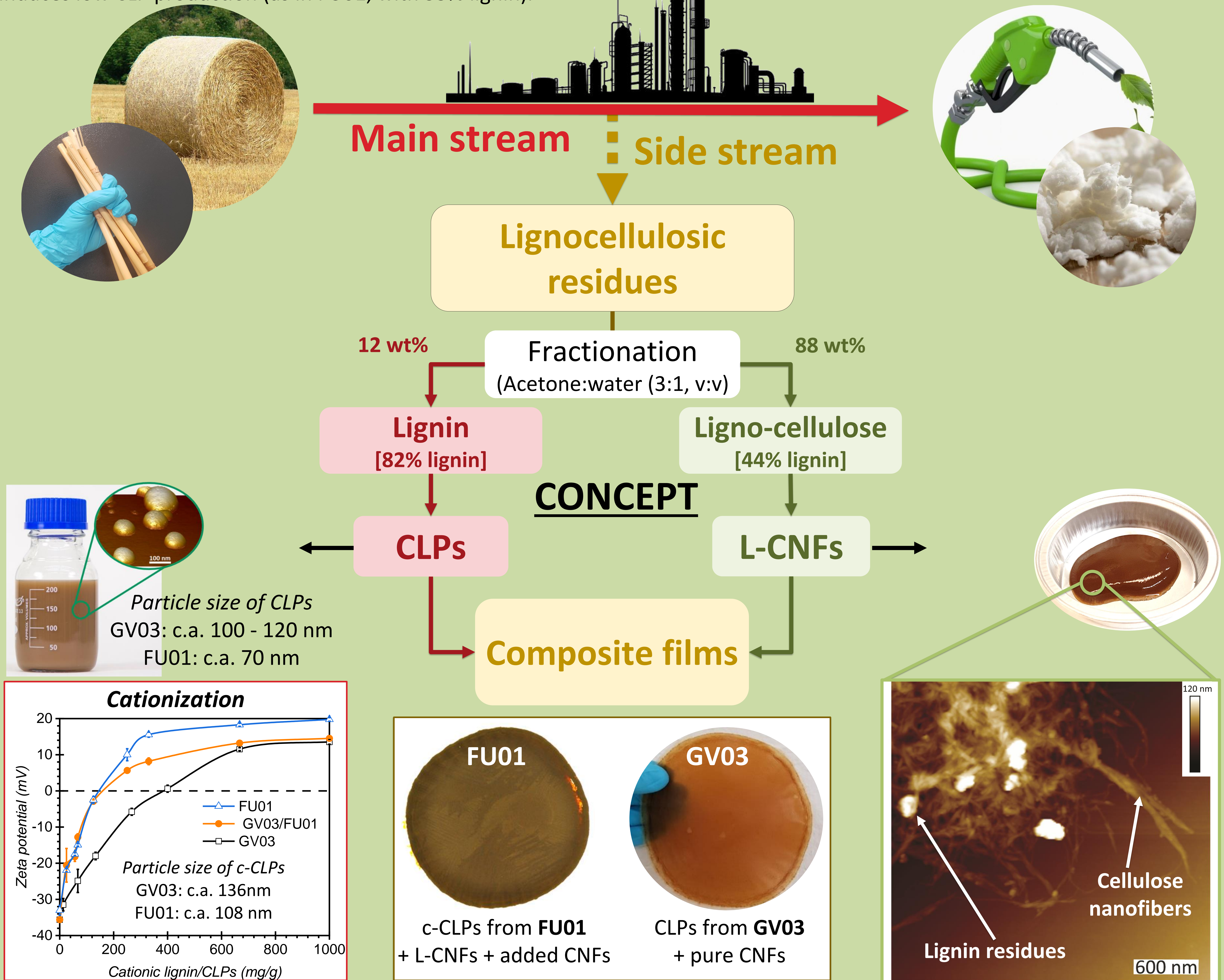


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Background: Lignocellulosic residues with high lignin content (as in GV03 with 89% lignin) can be directly valorized by transformation into colloidal lignin particles (CLPs). However, heterogeneous composition induces low CLP production (as in FU01,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

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



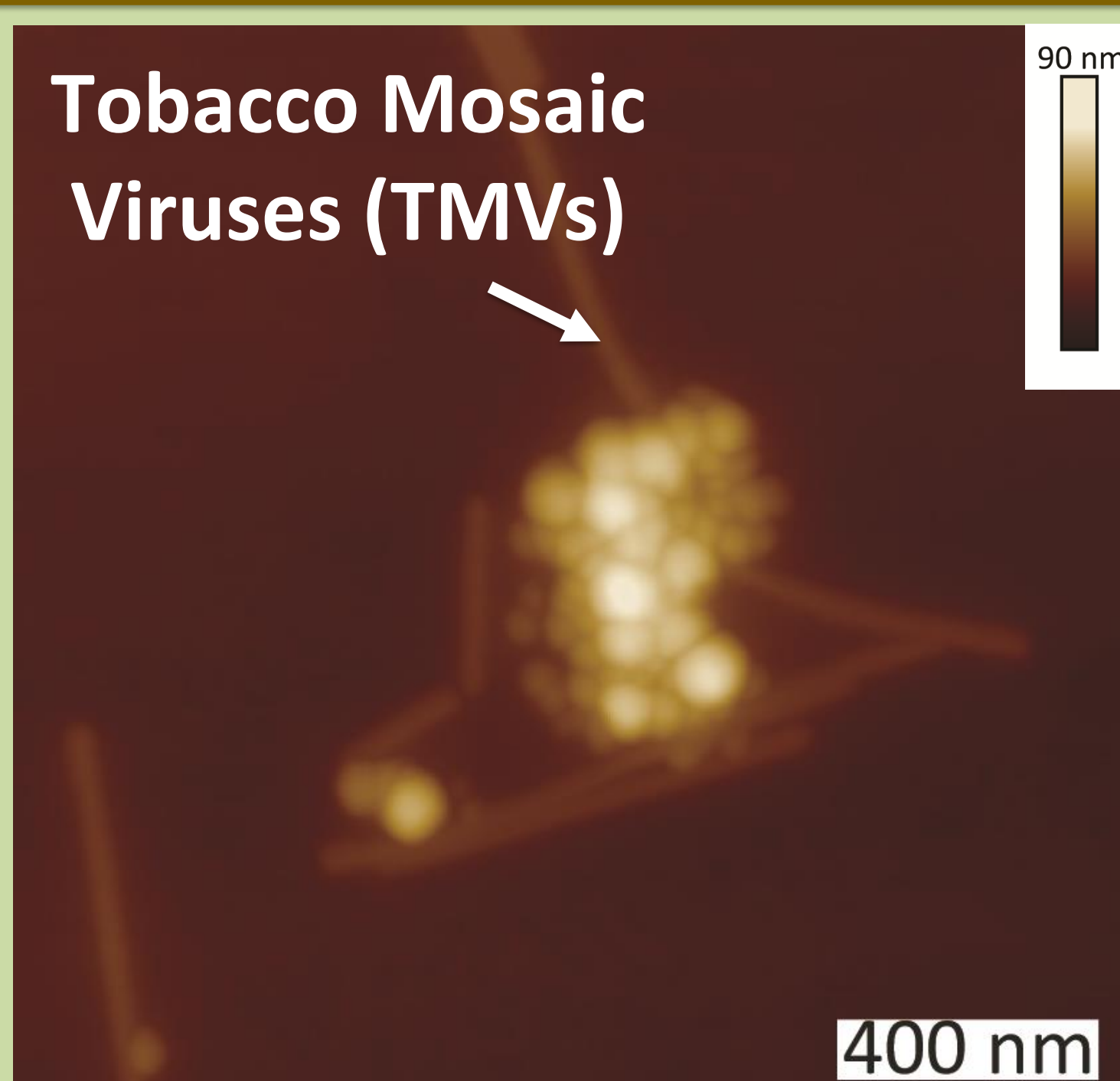
Application for c-CLPs

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.

Tobacco Mosaic Viruses (TMVs)



Conclusion:

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