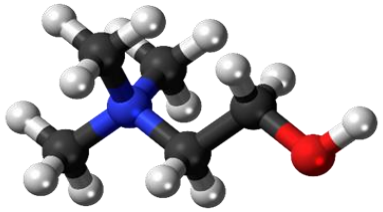
Poster N° : C53

Dissolution and extraction of biopolymers with biobased ionic liquids

Jean-Pierre Mbakidi , Mahasoa-Salina Souvenir Zafindrajaona, Dalila Saaoui, Katia Bacha, Magdalena Bendova, Sandrine Bouquillon

Choline



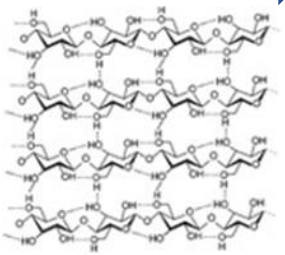
Choline (Soja)

Synthesis in three-steps

Green Chemistry

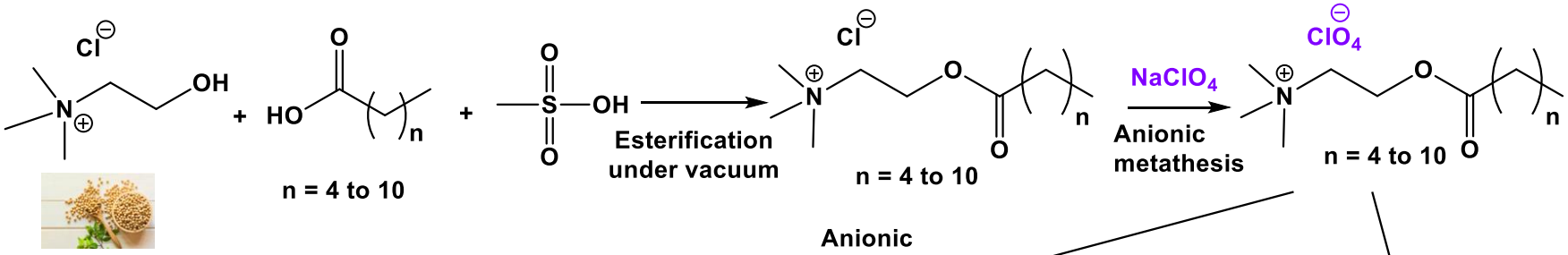
Biobased ionic liquids : hydrophilic or hydrophobic

Biopolymer Processing



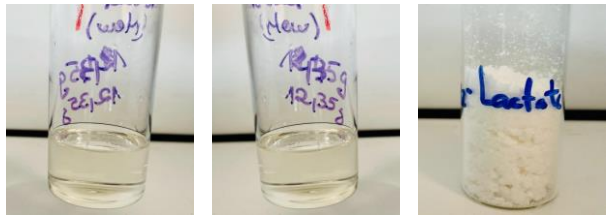
Synthesis of biobased ionic liquids (3 steps)

❑ Synthesis



n = 4 Chol-C6-Lac
n = 6 Chol-C8-Lac
n = 8 Chol-C10-Lac
n = 10 Chol-C12-Lac

n = 4 Chol-C6-Lev
n = 6 Chol-C8-Lev
n = 8 Chol-C10-Lev
n = 10 Chol-C12-Lev



Chol-C8 lactate | Chol-C10-lactate | Chol-C12-lactate

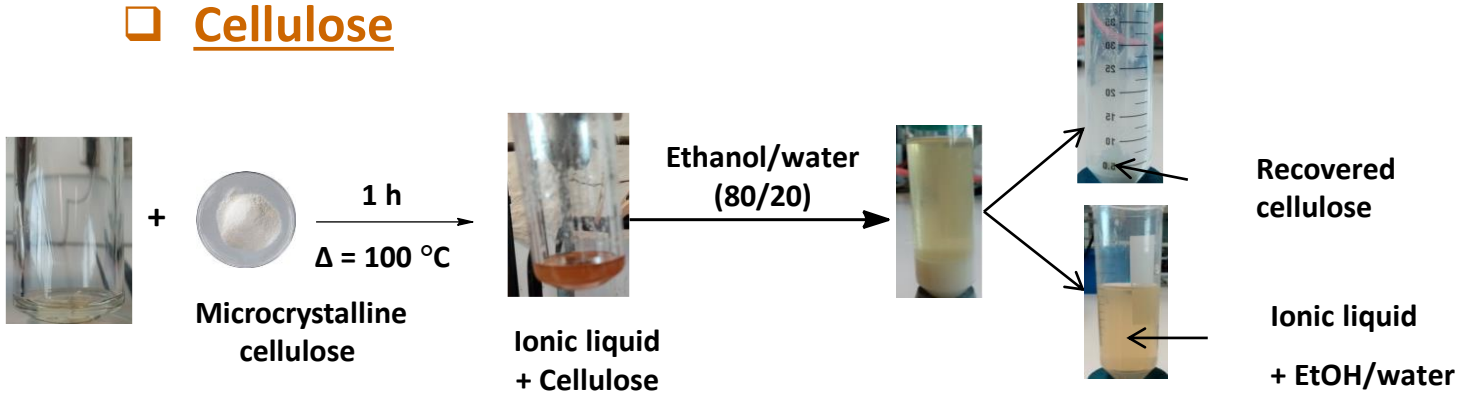
❑ Yields and viscosities

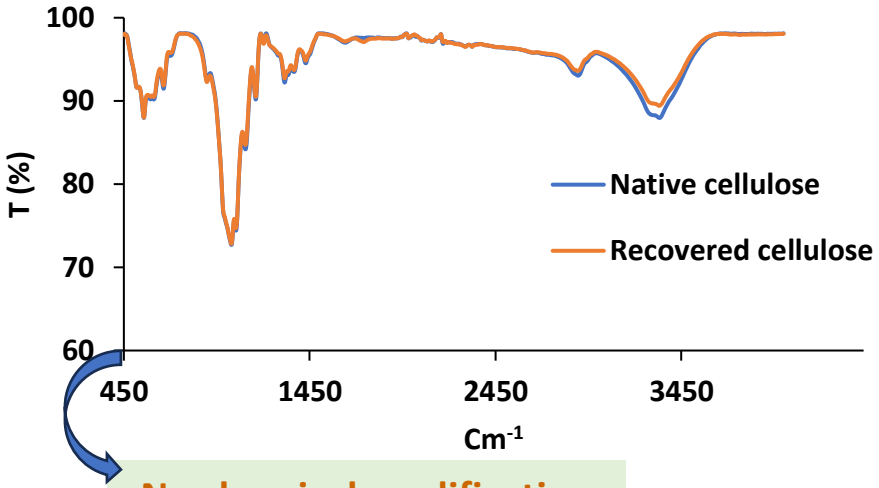
Ionic liquid	Yield (%)	Viscosity (cP) at 60°c
Chol-C6-Lac	60	19.8
Chol-C6-Lev	70	28.4
Chol-C8-Lac	79	49.3
Chol-C8-Lev	76	67.8
Chol-C10-Lac	60	Nd
Chol-C10-Lev	71	Nd
Chol-C12-Lac	57	Nd
Chol-C12-Lev	59	Nd

Mbakidi J.-P., Bouquillon S. (2020) PCT/EP2020/070365

Biopolymer (Cellulose and Lignin) processing

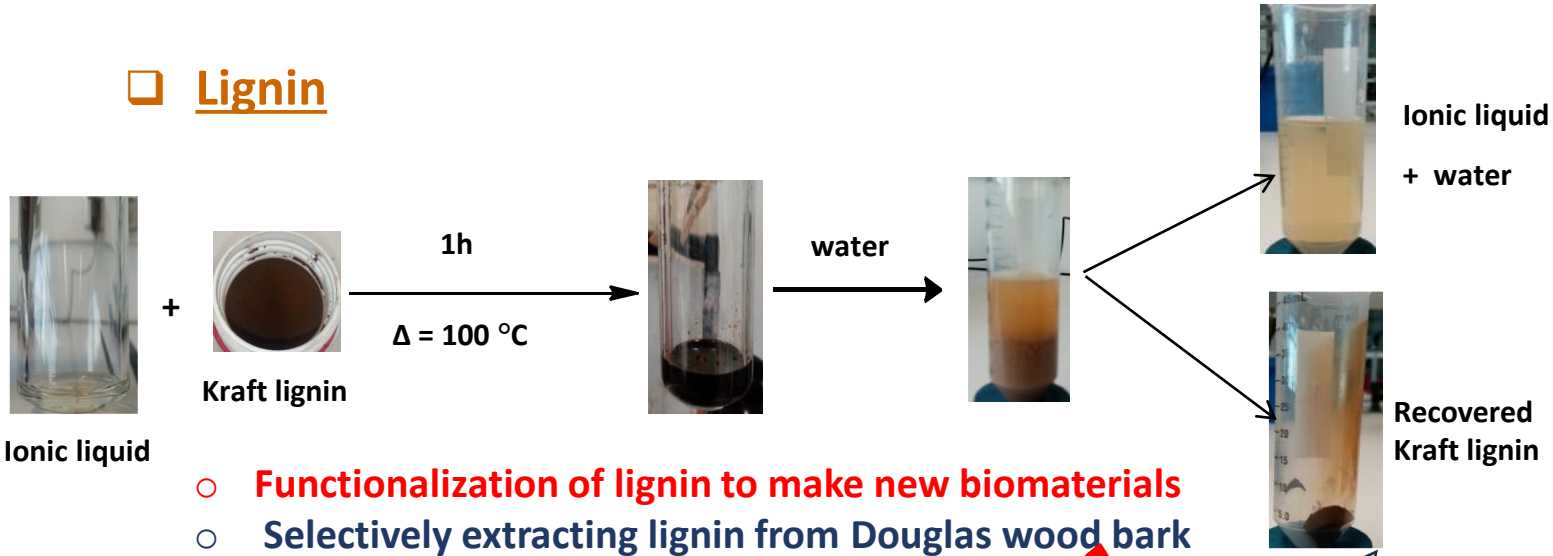
❑ Cellulose

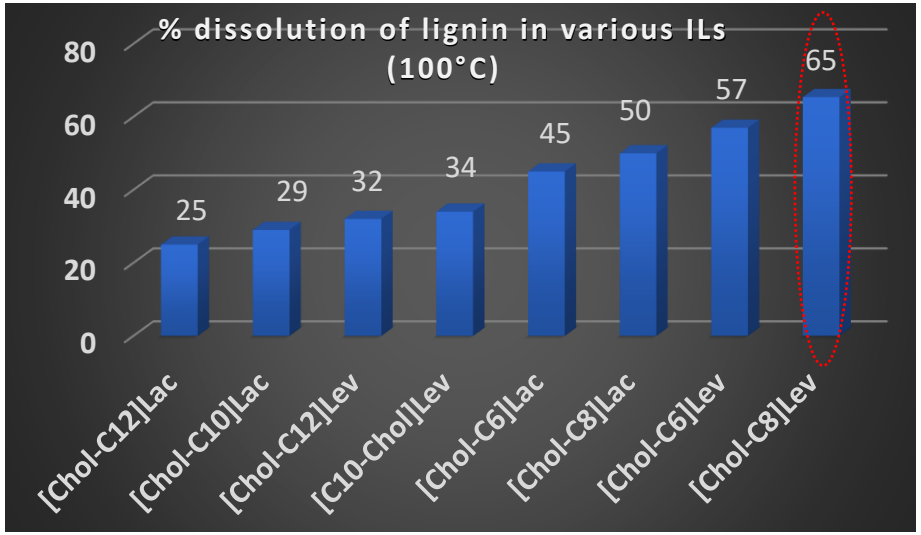




No chemical modification

❑ Lignin





- Functionalization of lignin to make new biomaterials
- Selectively extracting lignin from Douglas wood bark

See poster N° C53

Efficient dissolution of lignin up 65% (mass)

Mbakidi J.-P., Kerkache A., Lazar F., Bouquillon S. (2022), Dissolution of Cellulose and Lignin with Biobased Ionic Liquids. J. Solut. Chem., 51(3), 345-356.