LIGNI COAT

**Sustainable coatings based on lignin resins and bio-additives with improved fire, corrosion and biological resistance**

# Production of Dispersants for Special Carbon Black by Oxidization of Fractionated Kraft Lignin

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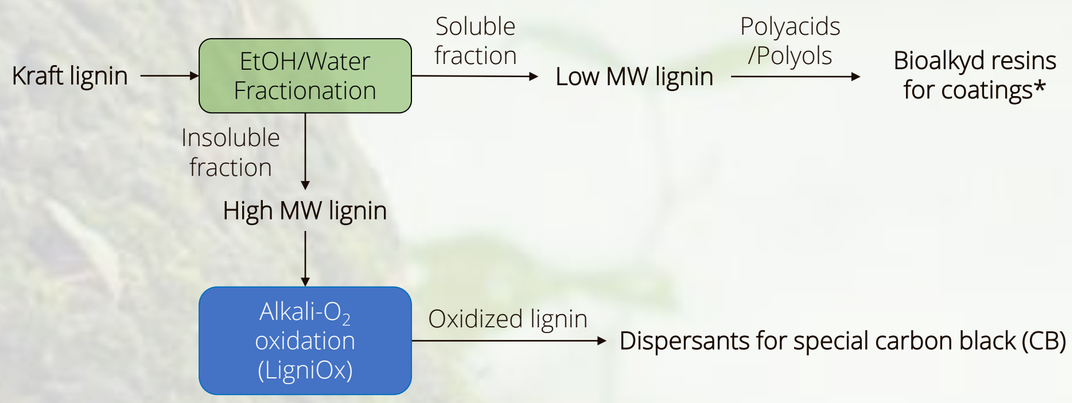
## Introduction

Intensifying industrial valorization of kraft lignin calls for:

- Large scale production of value-added bioproducts instead of burning lignin for bioenergy only
- Full valorization of kraft lignin in the process

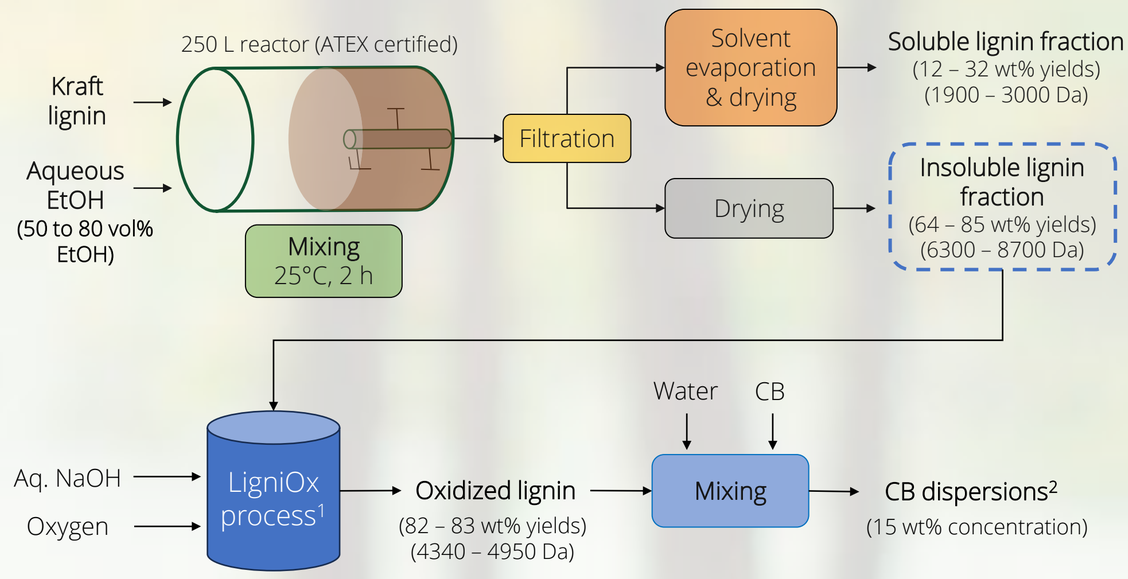
Fractionation of kraft lignin by aqueous ethanol can produce homogenized lignin fractions of low and high Mw for suitable for upgrading to dispersants for special carbon black and biocoatings




*Fractionation of Kraft lignin for production of alkyd resin coatings, Arpa Ghosh, VTT, Finland*
Session 3A – Biorefining I, RRB Conference, June 6, 2024

## Materials and Methods

Production of dispersants by LigniOx process[1] using insoluble lignin from EtOH/water fractionation; Demonstration of the dispersing ability using special carbon black pigments[2]



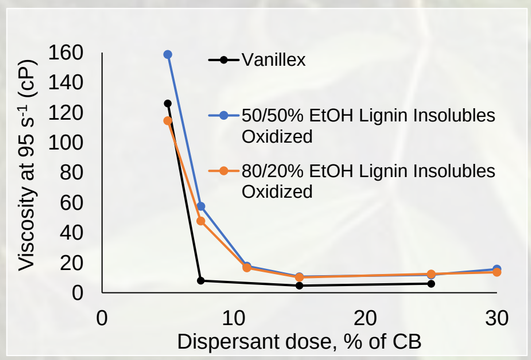

[1]Kalliola et al., 2022
[2]Fearon et al., 2021

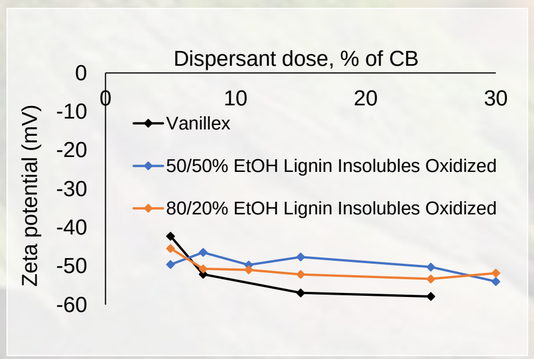
Testing CB dispersions at fresh state (0 day) and after storing at 50°C for 14 days for viscosity, zeta potential, and particle size against a commercial product (Vanillex - modified lignosulfonate dispersant)

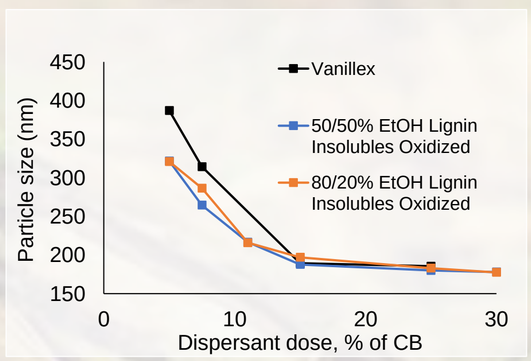
## Results and Conclusions

- Oxidized insoluble lignin fraction exhibited good dispersing performance against the commercial product (Vanillex)
- LigniOx dispersants provided good stability at fresh (0 d) CB paste and after storing it for two weeks (14 d) at 50°C
- LigniOx process helps with full valorization of kraft lignin by solvent fractionation pathway

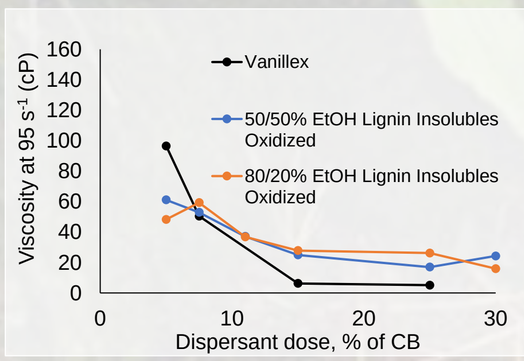
**0 d**

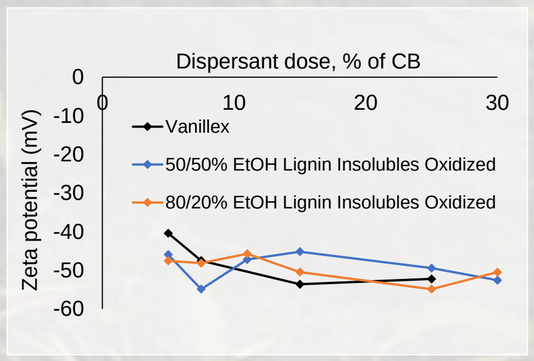


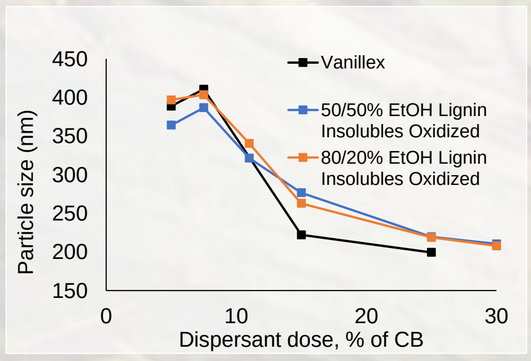




**14 d**




Special carbon black paste prepared using LigniOx dispersants

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