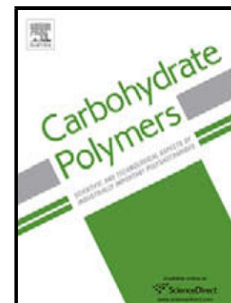


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Preparation of cellulose nanofibers by TEMPO-oxidation of bleached chemi-thermomechanical pulp for cement applications

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Highlights

- TEMPO process removed 74% of pentosans and 80% of lignin from BCTMP.
- 1340% water retention was obtained by having 1.44 mmol/g carboxylates on CNF.
- Cellulose nanofibers were used in cementitious mixtures.
- CNF with carboxyl groups resulted in better flow control in wet cement paste.
- CNF reduced the crack growth in concrete.

Abstract

Hardwood bleached chemi-thermomechanical pulp (BCTMP) was converted to cellulose nanofibers by 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO) catalyzed oxidization along with mechanical defibrillation process. The TEMPO reaction was evaluated based on the

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