

Defence announcement

Public Defence on 26 May 2023

Bleaching of kraft pulps with hypochlorous acid

Title of the doctoral thesis	Catalyzed and non-catalyzed hypochlorous acid bleaching of kraft pulps
Content of the doctoral thesis	<p>Pulp bleaching is a well-established industrial process that requires significant amounts of energy to increase the brightness of the wood pulp. It is a multistage process that removes colored compounds, such as lignin, from the pulp using long residence times (4–8 h) and elevated temperatures.</p> <p>This thesis aimed to develop a faster and less energy-demanding bleaching technology by using hypochlorous acid as a bleaching chemical for kraft pulp. The direct use of hypochlorous acid as a bleaching agent has been discouraged by previous authors due to its instability and environmental concerns. Nevertheless, surprising results have been obtained.</p> <p>This thesis shows that hypochlorous acid bleaching stages are highly efficient for delignification purposes. Indeed, bleaching sequences that include them can produce fully bleached pulps in just one hour. This research also addressed the environmental impact of the hypochlorous acid bleaching stages and the role of tertiary amine catalysts in the catalyzed stage.</p>
Field of the doctoral thesis	Wood chemistry/ Pulp bleaching
Doctoral candidate and contact information	M.Sc. (Tech.) Estefania Isaza Ferro estefania.isazaferro@aalto.fi
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Remote defence	https://aalto.zoom.us/j/68539594512
Place of public defence	Aalto University School of Chemical Engineering, Lecture hall Ke2 (Komppa-Sali), Kemistintie 1, (main door at Biologinkuja) Espoo
Opponent(s)	Professor Thomas Rosenau, University of Natural Resources and Life Sciences, Vienna (BOKU), Department of Chemistry, Tulln, Austria
Custos	Professor Tapani Vuorinen, Aalto University School of Chemical Engineering, Department of Bioproducts and Biosystems, Espoo, Finland
Link to electronic thesis	https://aaltodoc.aalto.fi/handle/123456789/51
Keywords	Wood pulp bleaching; Hypochlorous acid; Tertiary amines; Eucalyptus pulp; Stoichiometry; Lignin; Hexenuronic acid