

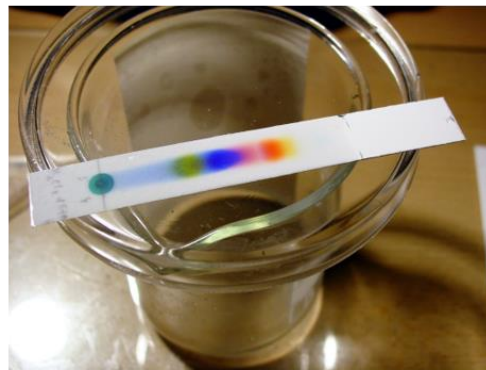
Bachelor's Thesis

We are looking for a student interested in applied industrial research for the following Bachelor's project:

Implementing a thin layer chromatographic (TLC) method to quantify pitch compounds present in papermaking process

Background: In the kraft pulping process wood chips are converted into pulp by cooking under alkaline conditions. In the course of this process lignin, hemicelluloses and other extractives (pitch) are dissolved into the cooking liquor and fibers are separated for papermaking. The fibers are washed after cooking to remove the dissolved wood material and cooking chemicals. Unfortunately, this washing is never perfect and part of the dissolved wood material ends up to the paper mill with fibers. From the different dissolved wood compounds pitch has been found to be especially harmful for papermaking as it reduces the paper strength and causes fouling. Thus, it is important to monitor/quantify and control the content of harmful pitch compounds present in the papermaking process.

Project description: The aim of this bachelor's project is to implement a rapid and simple thin-layer chromatographic (TLC) method to separate and quantify the harmful pitch compounds. The method was originally developed by Sandström et al. 1996¹. This project includes the following implementation tasks: TLC separation of neutral pitch model compounds (e.g. sterols), TLC separation of model fatty and resin acid compounds, measurement of UV calibration curves for the relevant model compounds with UV-vis spectrophotometer to enable quantitative analysis, testing the method with industrial pitch samples.



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¹ Sandström M., Norborg M.A. and Ericsson, A. (1996): Applications of thin-layer chromatography to process control in the pulp and paper field, *Journal of Chromatography A* 730, 373-379.