

Nikolaos Pahimanolis
M.Sci.(Tech)
Aalto University School of Chemical Technology
Department of Biotechnology and Chemical Technology
Polymer Technology Research Group
npahiman@cc.hut.fi



Aqueous Phase Modification of Polysaccharides

I earned my degree of M.Sci.(Tech) in February 2009 at Helsinki University of Technology, Faculty of Chemistry and Materials Science, Polymer Technology. The subject of the thesis was the chemical modification of polysaccharides utilizing “click”-chemistry. The methods used were based on epoxide-reactions and the copper-catalyzed azide-alkyne cycloaddition, which I have further extended as a postgraduate researcher at Aalto, aiming for doctoral thesis. The research field of my current studies is Polymer Technology and the supplementary field is Forest Products Chemistry, which support the ongoing research on modification and applications of natural polymers.

I'm currently working on aqueous phase modification of cellulosic structures. The application of click-chemistry principles is studied for both nanofibrillated cellulose and solubilized cellulose. The utilization of metal-free reaction systems is developed to avoid using toxic heavy metal catalysts. Environmental and industrial aspects, such as safety and making all chemical alterations in benign solvents such as water, are emphasized.

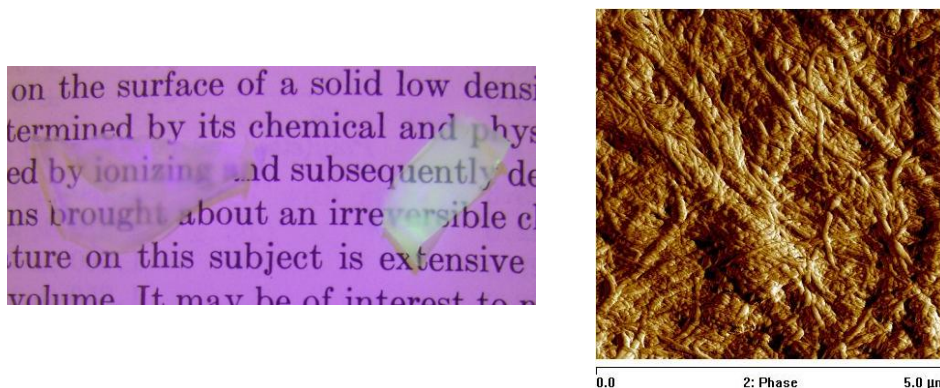


Figure 1. A photograph of fluorescent nanofibrillated cellulose obtained by copper-catalyzed azide-alkyne cycloaddition and an AFM phase image of amine-modified NFC.