

Experimental evidence on medium driven cellulose surface adaptation demonstrated using nanofibrillated cellulose

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Electronic supplementary information

Electronic supplementary information includes SEM image of spin-coated nanofibrillated cellulose (NFC) and photographs of NFC dispersed in DMA and toluene (S1), the XPS survey spectra recorded for macroscale cellulosic fibers and different nanofibrillated cellulose samples (S2) and the contact angle recorded as a function of time for NFC spin-coated samples (S3).

S1 SEM image of nanofibrillated cellulose spin-coated from toluene as well as photographs of NFC dispersion in DMA (top) and in toluene (below)

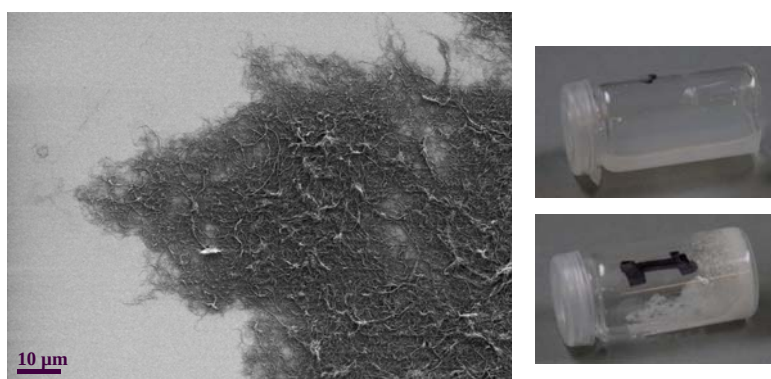


Fig S1 SEM image of spin-coated nanofibrillated cellulose from toluene (left). NFC dispersed in DMA (upper right hand image) and in toluene (lower right hand image).

S2 XPS survey spectra of different cellulosic samples

XPS survey spectra showing peaks due to emission of O 1s, C 1s, Si 2s and Si 2p electrons. Survey scans were used in determination of surface elemental concentrations. O 1s (oxygen) and C 1s (carbon) originate from cellulose where as Si 2s and Si 2p (silica) are markers for successfully silylated nanocellulose samples

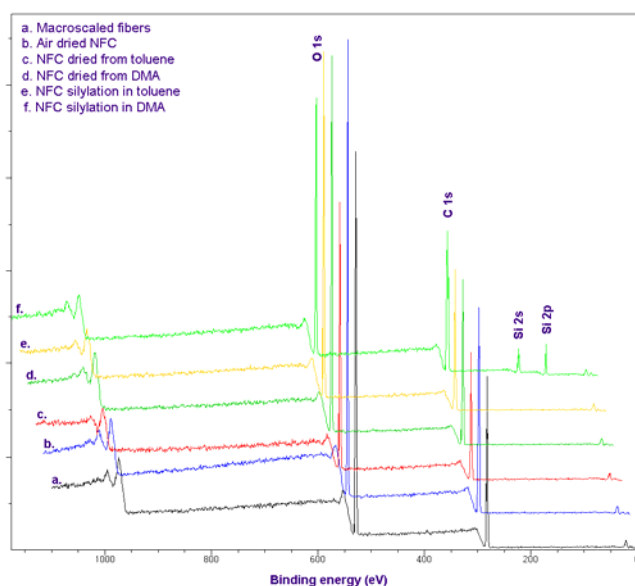


Fig S2 Low resolution XPS survey spectra recorded for macroscaled fibers (XPS *in-situ* reference), air dried NFC, NFC solvent exchanged to toluene or to DMA as well as for NFC silylated either in non-polar medium (toluene) or in cellulose compatible, amphiphilic medium (DMA).

S3 Water contact angle as a function of time for NFC spin-coated on anchoring polymer layer before and after contact with water.

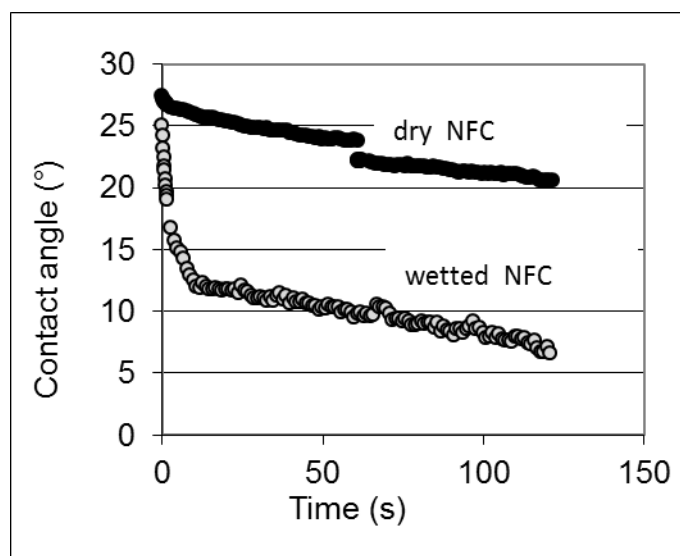


Fig S3. Changes of water contact angles for NFC spin-coated on silica surfaces covered with a layer of anchoring polymer recorded during 2 minutes. The dry NFC was measured after film preparation and thorough drying. The “wetted NFC” was measured after the sample had been thoroughly wetted with water and quickly dried with nitrogen gas. Note that the contact angle for the anchoring polymer is about 15 ° and does not change by the wetting treatment.