

Supplementary Information

Cellulose nanofibrils: a rapid adsorbent for the removal of cationic dyes

HMF and Furfural Concentration

High-performance liquid chromatography (HPLC) system (Agilent 1260) was equipped with Agilent, Hi-Plex H column with UV detector. The temperature of the column and detector was set at 60 and 55 °C, respectively, while a mobile phase 5 mmol H₂SO₄ was used at a flow rate of 0.6 mL/min.

| Sample concentration, (g/L) | Kenaf Core | CNF | AH10 | AH30 | AH90 | AH180 |
|-----------------------------|------------|---------|---------|---------|---------|---------|
| HMF | 0.01175 | 0.01724 | 0.01725 | 0.01745 | 0.01827 | 0.02018 |
| Furfural | 0.05670 | 0.07531 | 0.07304 | 0.07155 | 0.06966 | 0.06623 |

Table S1 Concentration of HMF and furfural after acid treatment at various time

Hemicellulose Removal

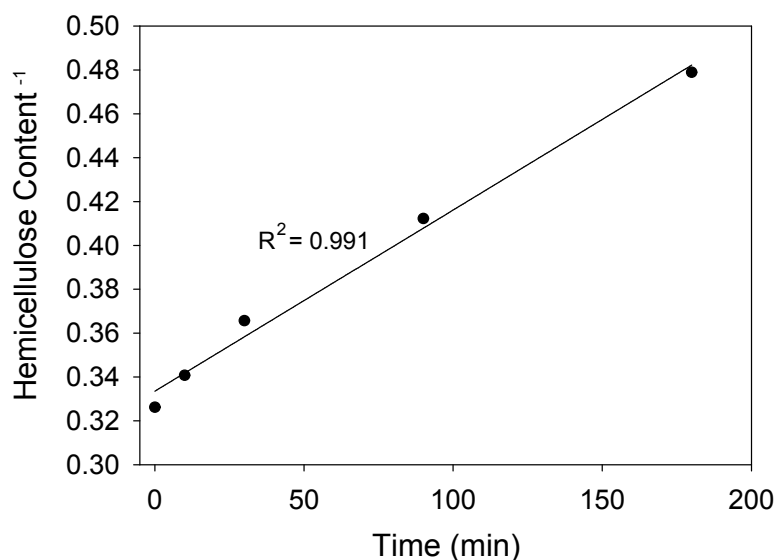


Fig. S1 Reciprocal of hemicellulose content in holocellulose by acid treatment (hydrolysis) at various times.

TEM

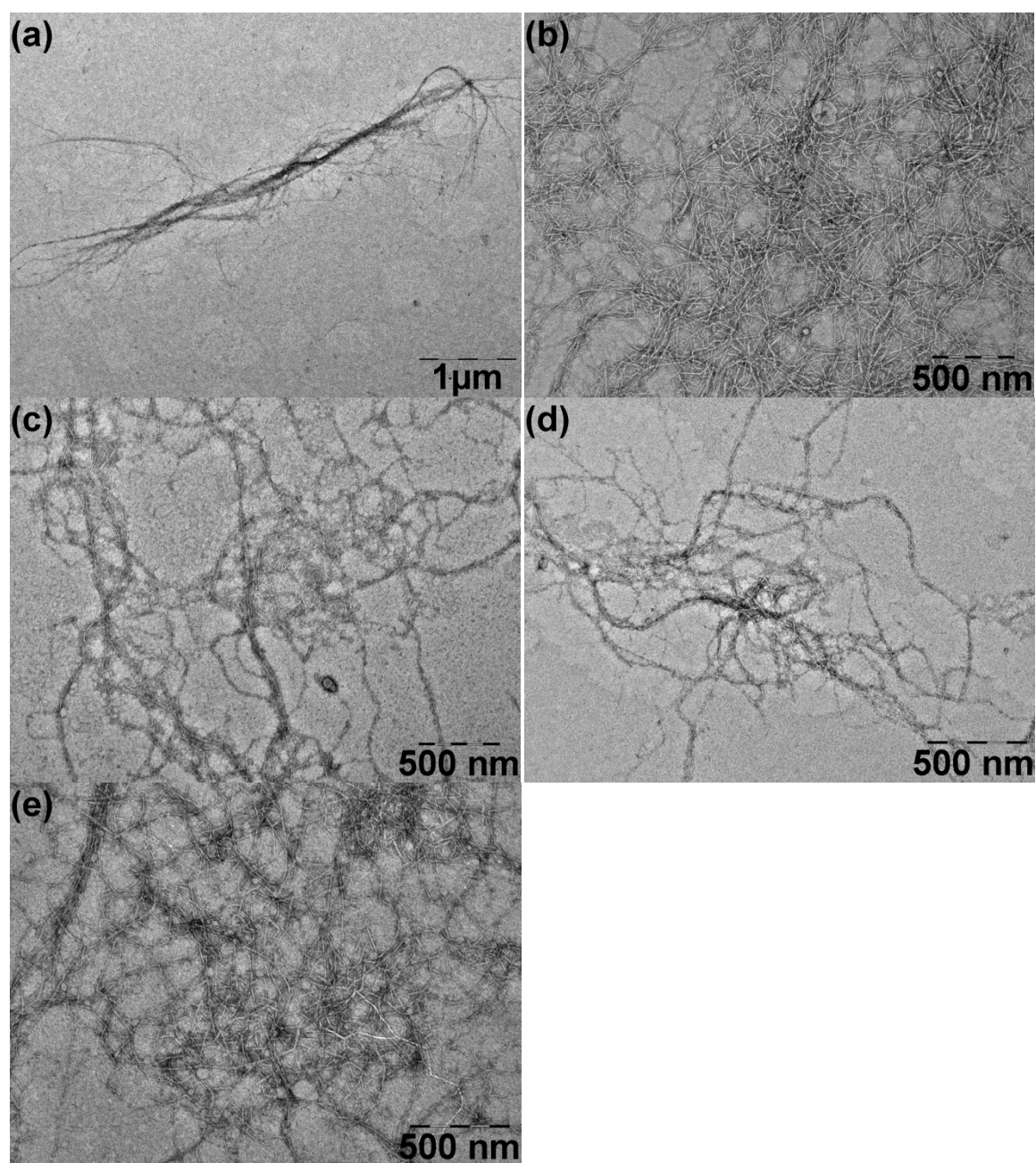


Fig. S2 TEM images of (a) holocellulose and defibrillated holocellulose of different acid treatment time (b) AH 10, (c) AH 30 and (d) AH 90.

Degree of Defibrillation (UV-Vis)

CNF and defibrillated acid treated holocellulose (AH 10, AH 30 and AH 90) of 0.7 wt.% was diluted in water into 0.035 wt.%. Dispersed fiber was sonicated for 2 minutes and analyzed immediately using UV-Vis spectrophotometer.

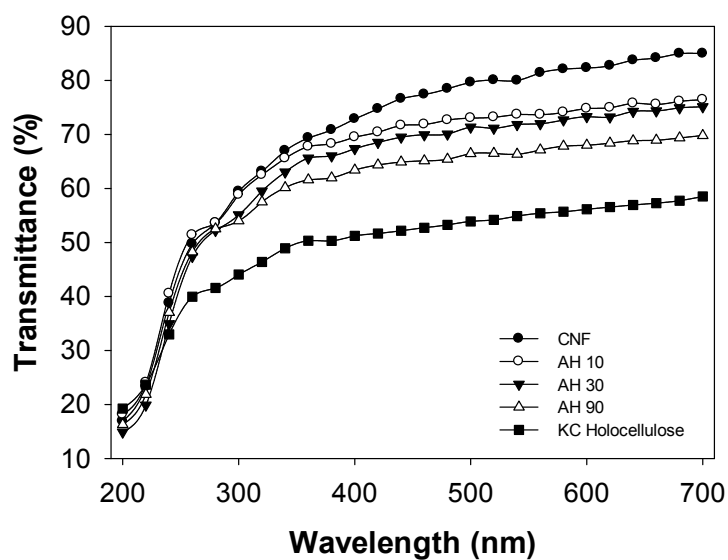


Fig. S3 Transmittance of KC holocellulose, CNF and defibrillated acid treated holocellulose.