nanomaterials

MDPI

Supplementary Materials

Nanocellulose Xerogel as Template for Transparent, Thick, Flame-Retardant Polymer Nanocomposites

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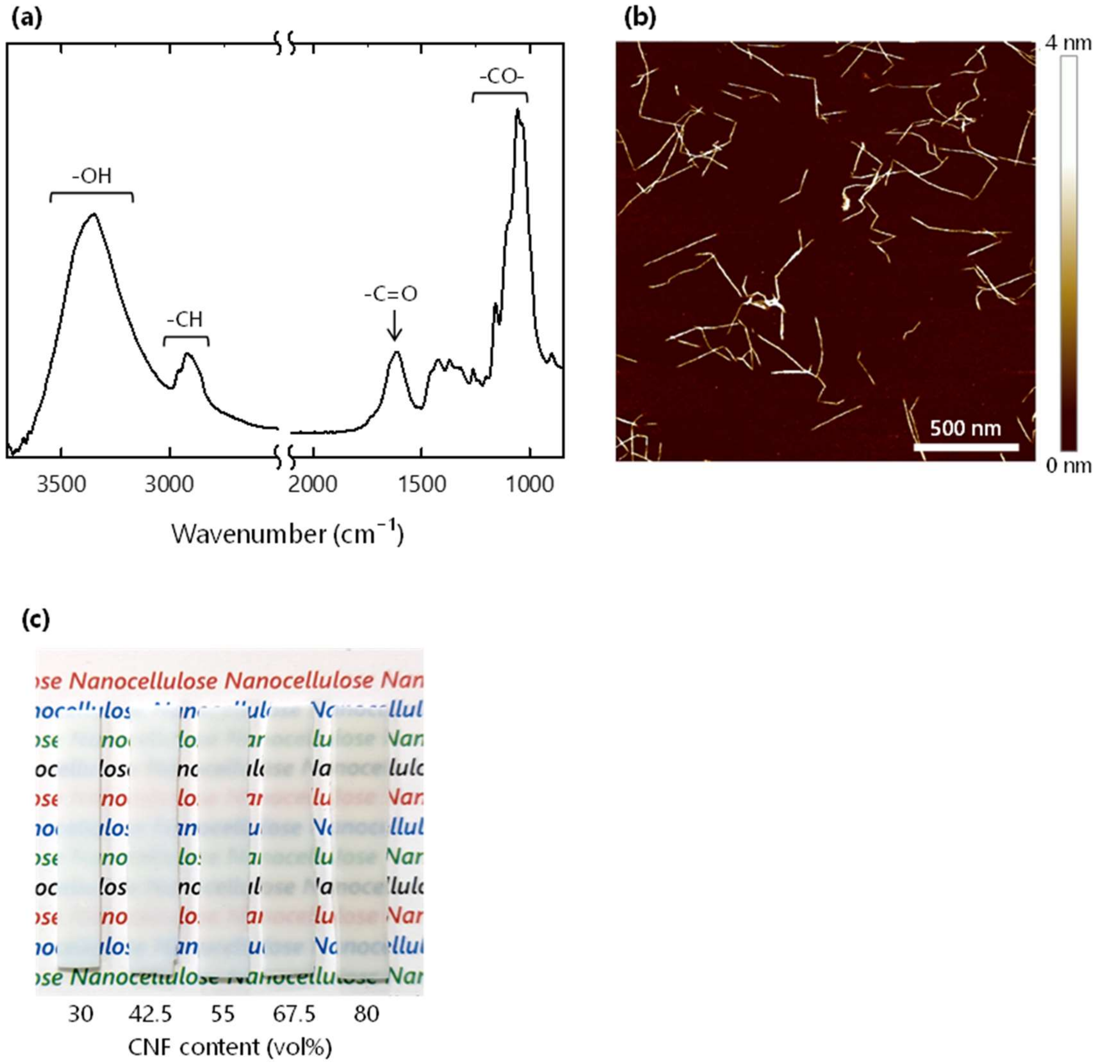

Figure S1. (**a**) FTIR spectrum and (**b**) AFM height image of the CNFs prepared in this study; (**c**) Appearance of the CNF xerogels with different bulk densities (thickness 1 mm). The FTIR spectrum (panel a) shows typical characteristics for TEMPO-oxidized cellulose [18]; the absorption peaks at approximately 3200–3500 cm^{-1}, 2900 cm^{-1}, 1600 cm^{-1} and 1000–1200 cm^{-1} are due to the stretching vibrations of the -OH, -CH, -C=O and -CO- moieties in TEMPO-oxidized cellulose, respectively.

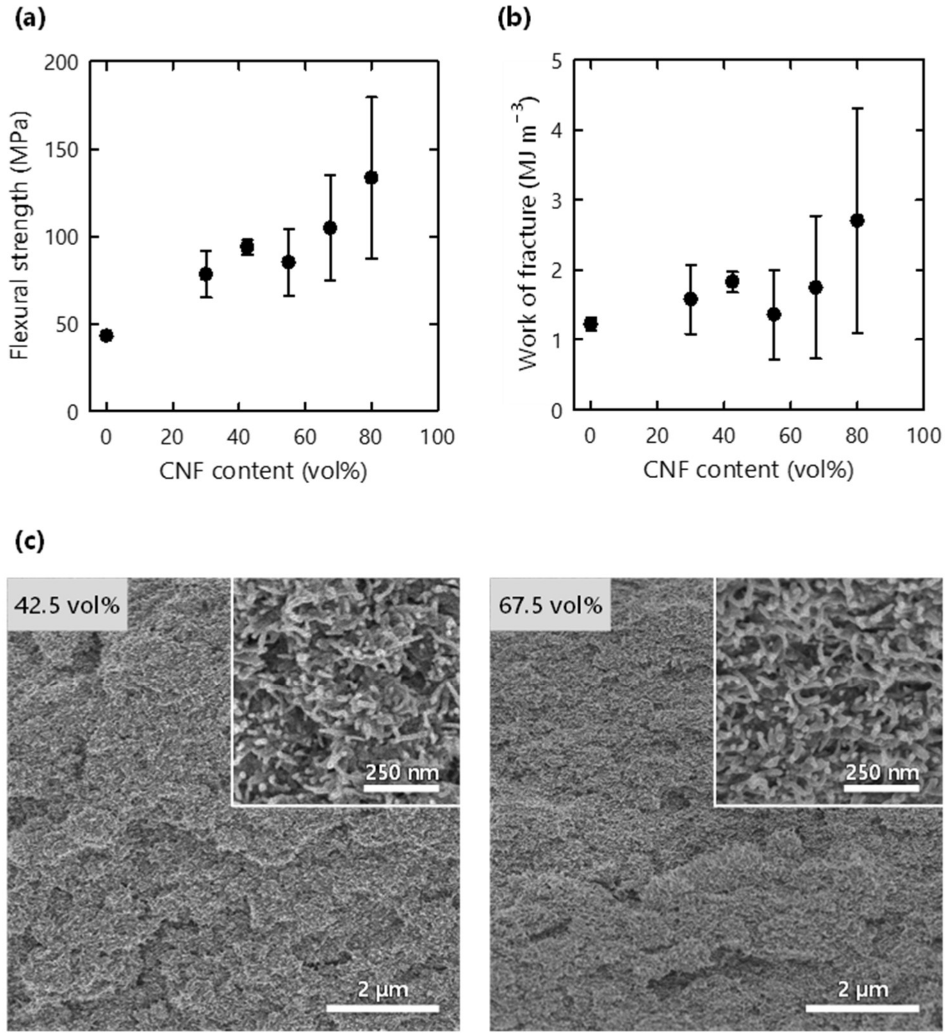

Figure S2. (**a**) Flexural strength and (**b**) work of fracture of composites as functions of CNF content; (**c**) SEM images of fractured surfaces of composites.

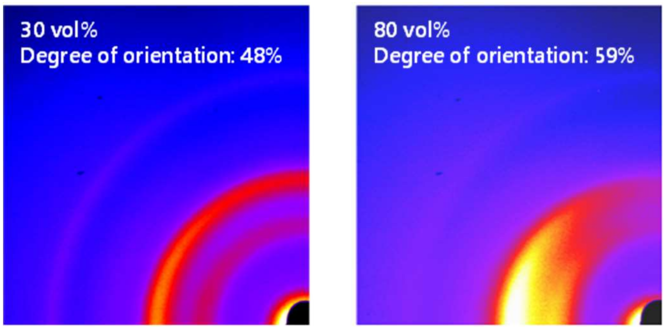

Figure S3. X-ray diffraction patterns of xerogels for incident beam parallel to in plane.

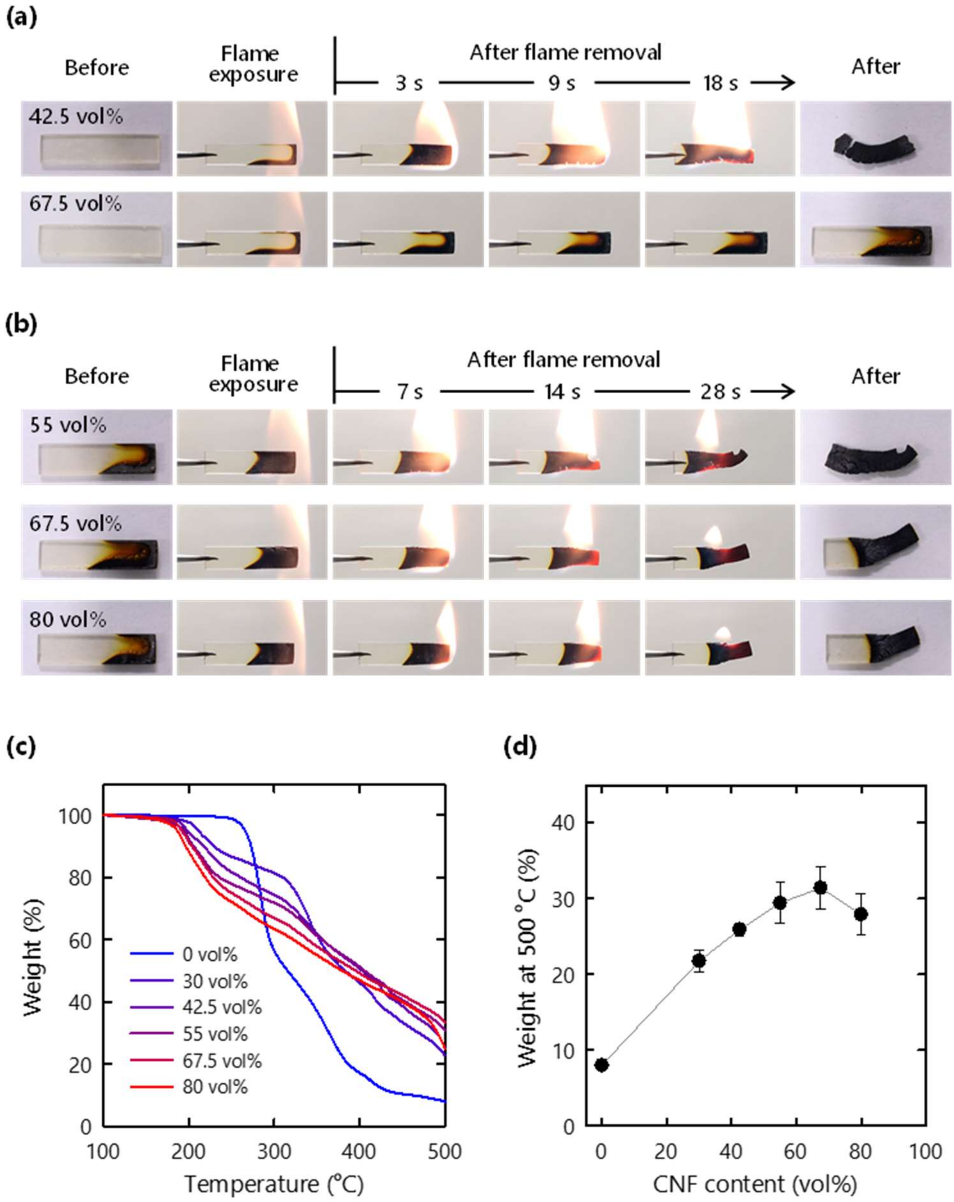

Figure S4. (**a**) Flammability test of CNF composites; (**b**) Additional flammability test of CNF composites with high CNF content; (**c**) TG curves of CNF composites under air conditions; (**d**) Residue weight at 500 °C based on TG analysis under air conditions.