Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information for:

A versatile method to fabricate functionalized cellulose nanofiber and its application

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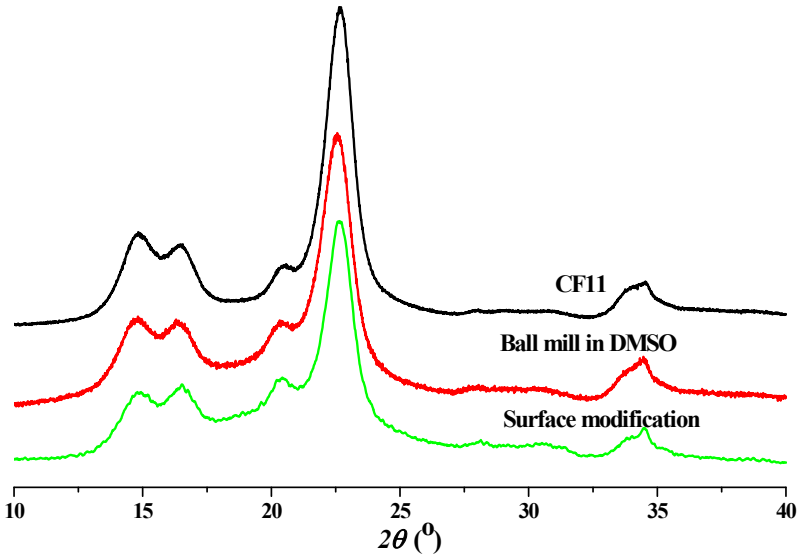

Figure S1. XRD spectrum of cellulose nanofiber. For all the samples, the peaks were located near 2θ =14.8, 16.6, 22.7, and 34.5 º, which were the characteristic positions of $1\bar{0}1$, 101, 002, and 040 reflections of cellulose I. It indicates that the esterification and ball-milling does not change cellulose crystal formation.

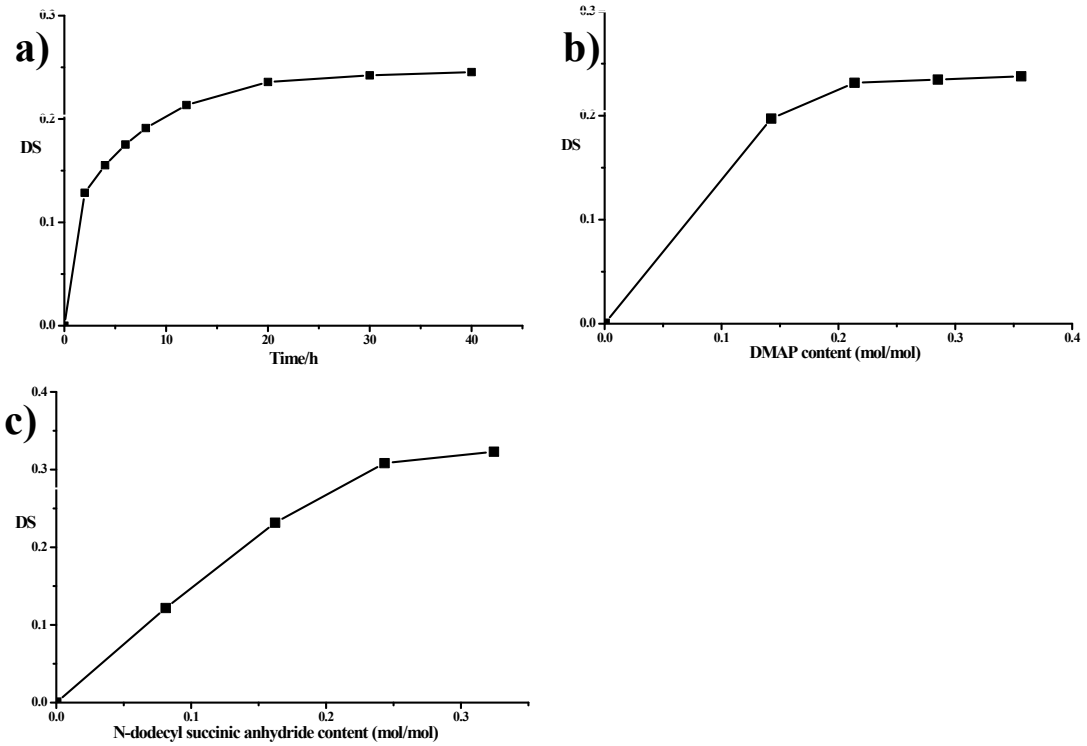

Figure S2. DS changing along with the ball milling time (a), the content of DAMP (b) and n-dodecyl succinic anhydride (c).

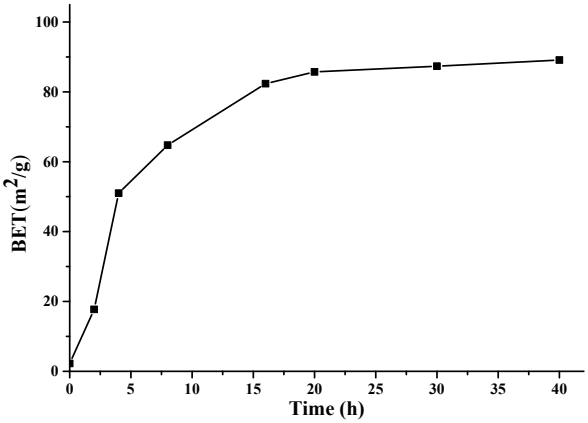

Figure S3. BET surface area of cellulose nanofiber ball milled in DMSO without additives. The samples were dispersed in DMSO (solid content 1%) by 10 min ultrasonic treatment, solvent-exchanged to n-butanol, and freeze dried.

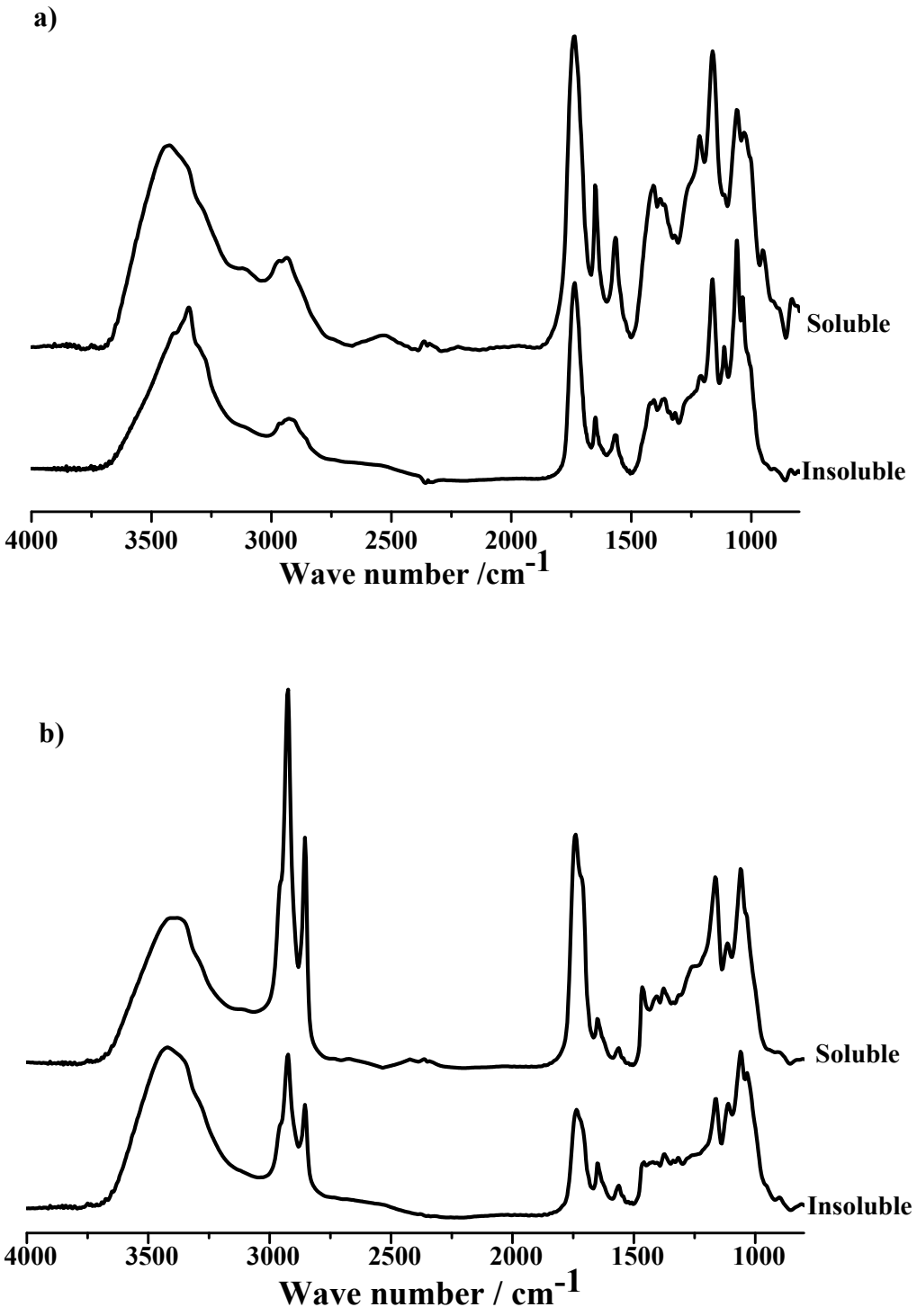

Figure S4. FTIR of cellulose nanofiber modified by succinic anhydride (a) and n-dodecyl succinic anhydride (b) from soluble and insoluble fraction, respectively.

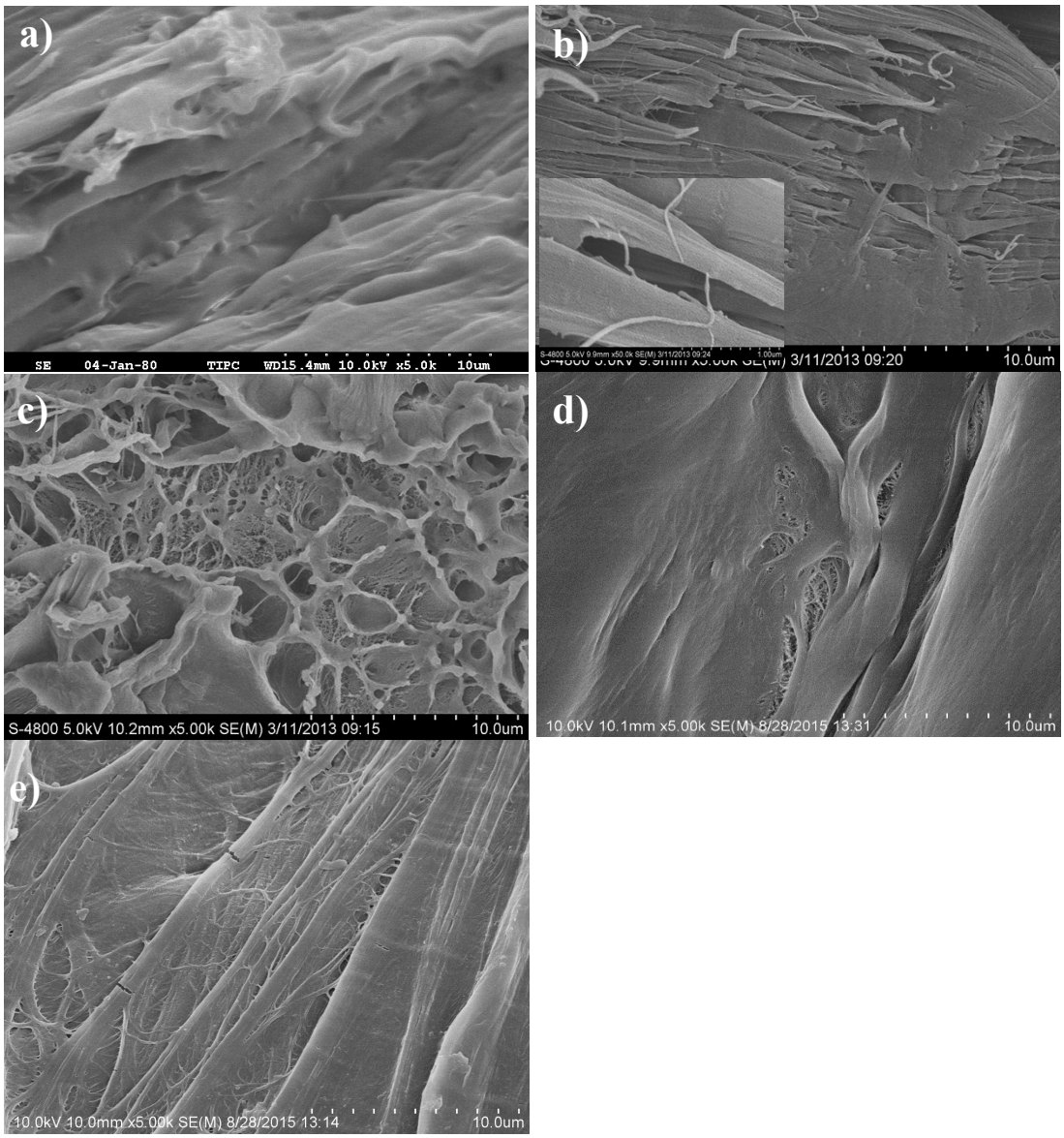

Figure S5. SEM image of tensile-fractured nanocomposite with 0% (a), 3% (b, c), 10% (d) cellulose nanofiber, and (e, f) 1% unmodified cellulose nanofiber.

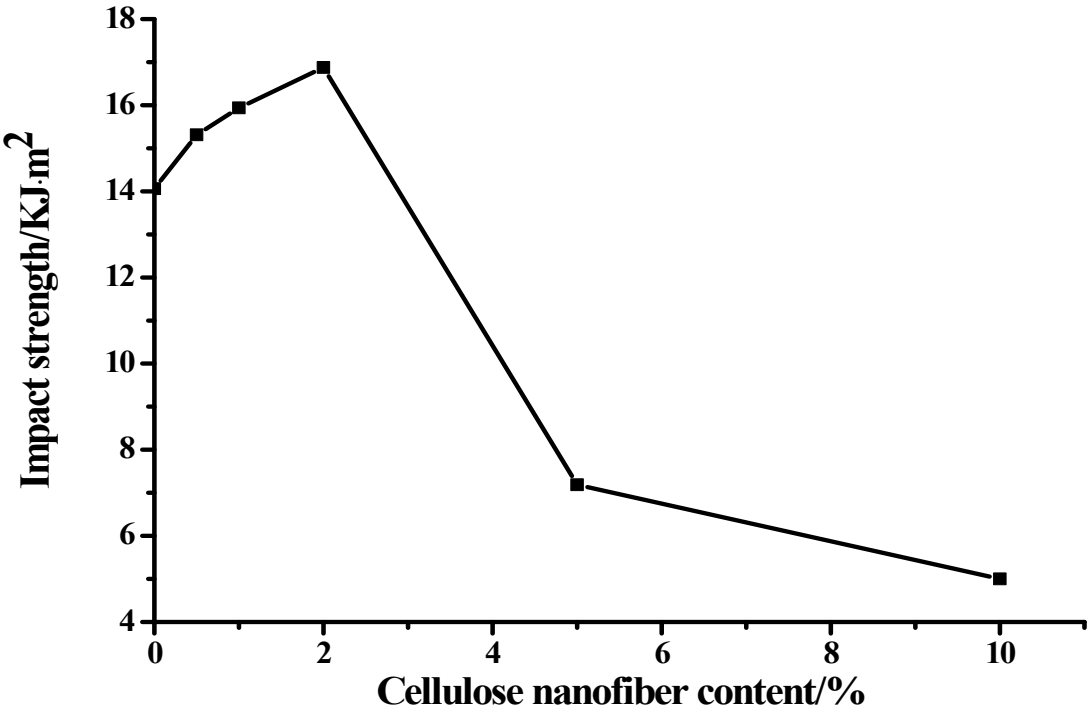

Figure S6 Impact strength of nanocomposite with different loading of cellulose nanofiber.