

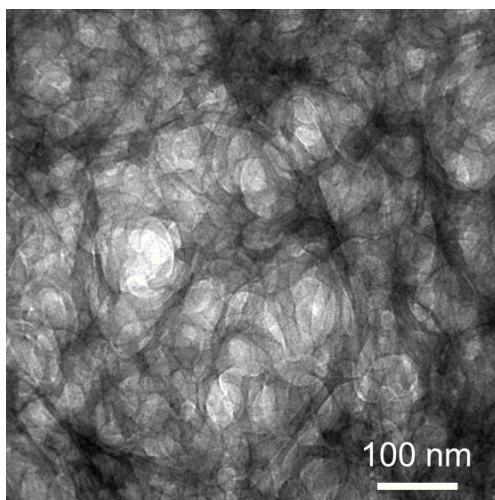
Bioinspired      Environmentally      Friendly  
Amorphous      CaCO<sub>3</sub>-Based      Transparent  
Composites Comprising Cellulose Nanofibers

*David Kuo, Tatsuya Nishimura,<sup>†</sup> Satoshi Kajiyama, Takashi Kato\**

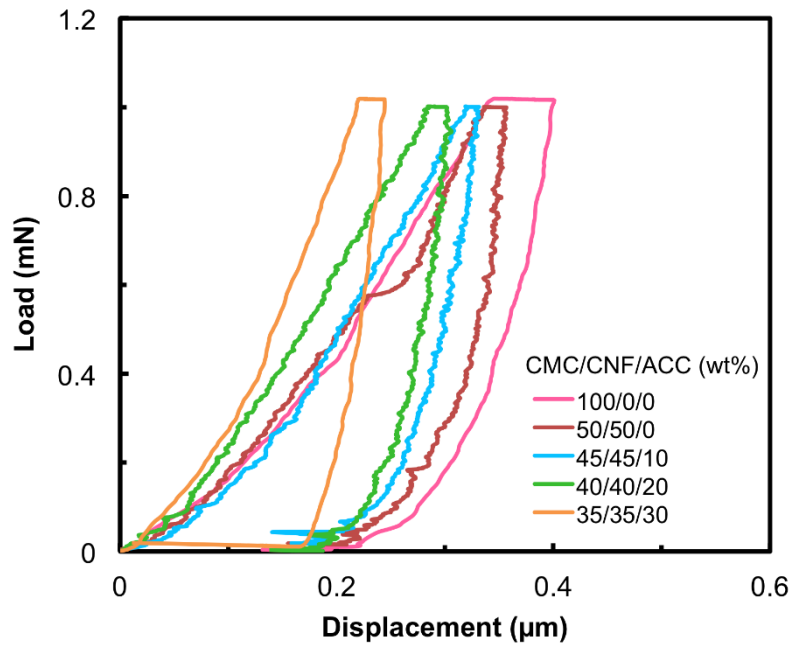
Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan.

<sup>†</sup>Present Address: Division of Material Sciences, Kanazawa University, Kakumamachi, Kanazawa, Ishikawa, 920-1192 Japan.

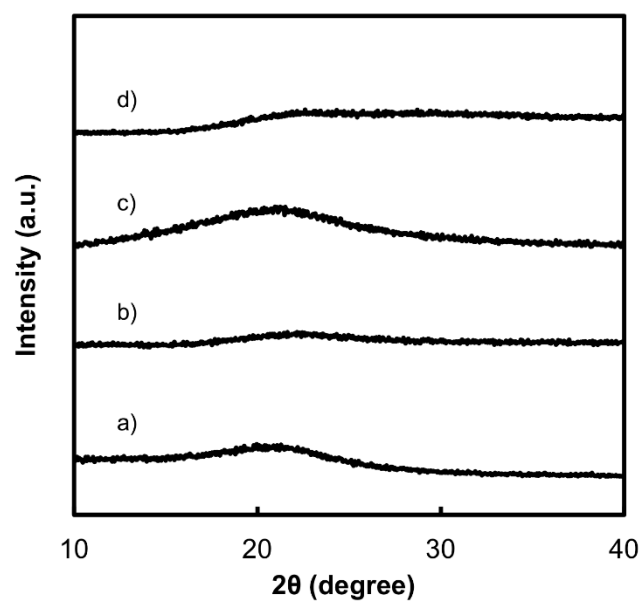
\* kato@chiral.t.u-tokyo.ac.jp



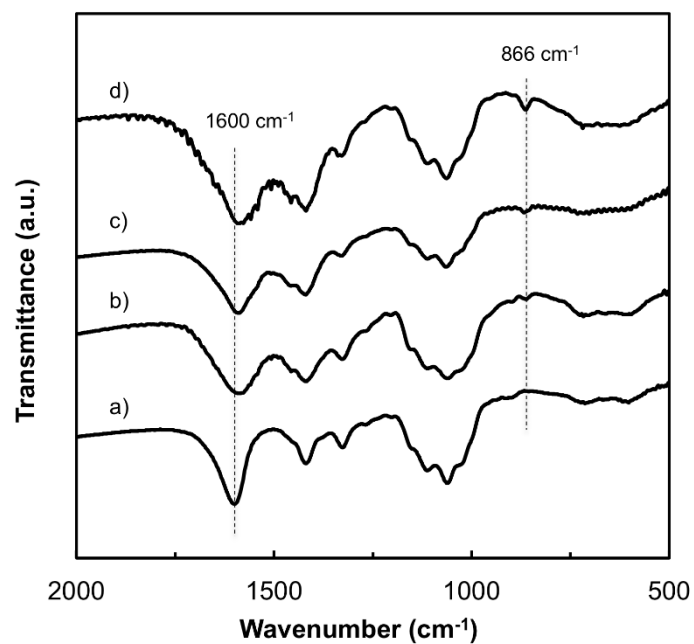
**Figure S1.** TEM image of cellulose nanofibers (CNFs) used in the present study.



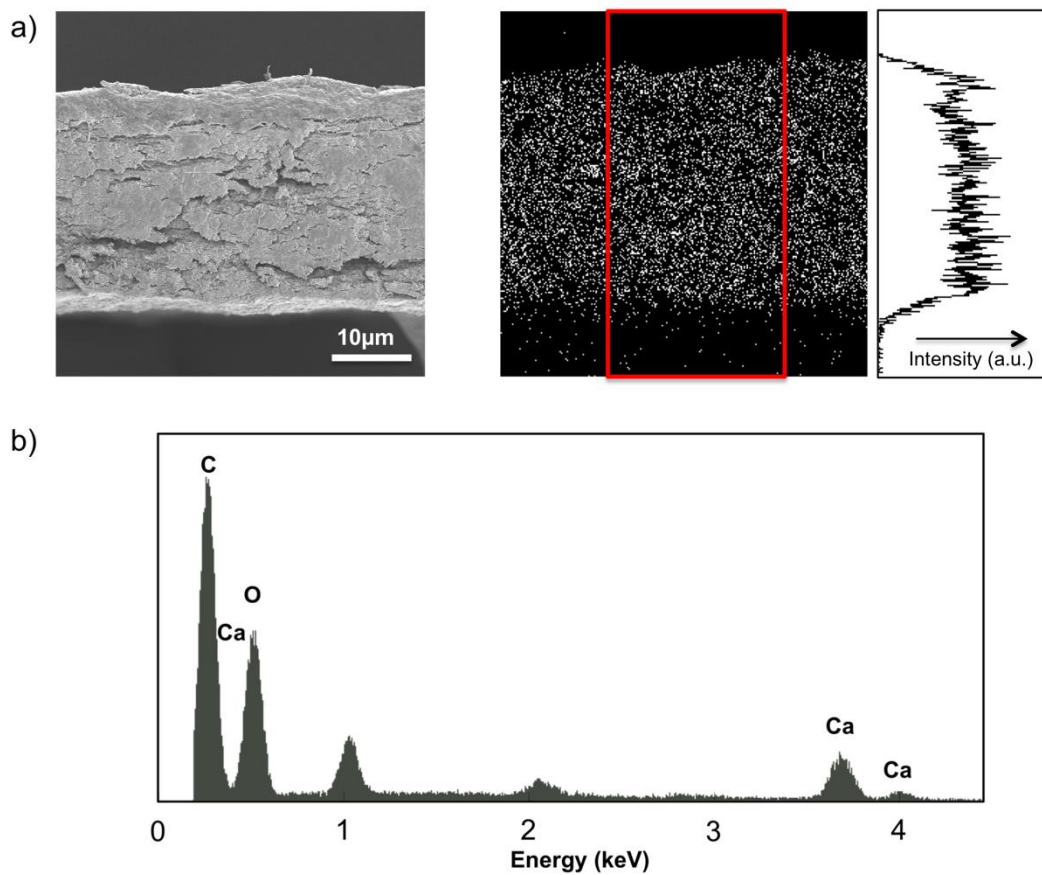
**Figure S2.** Indentation curves of CMC/CNF materials containing requisite amount of ACC.



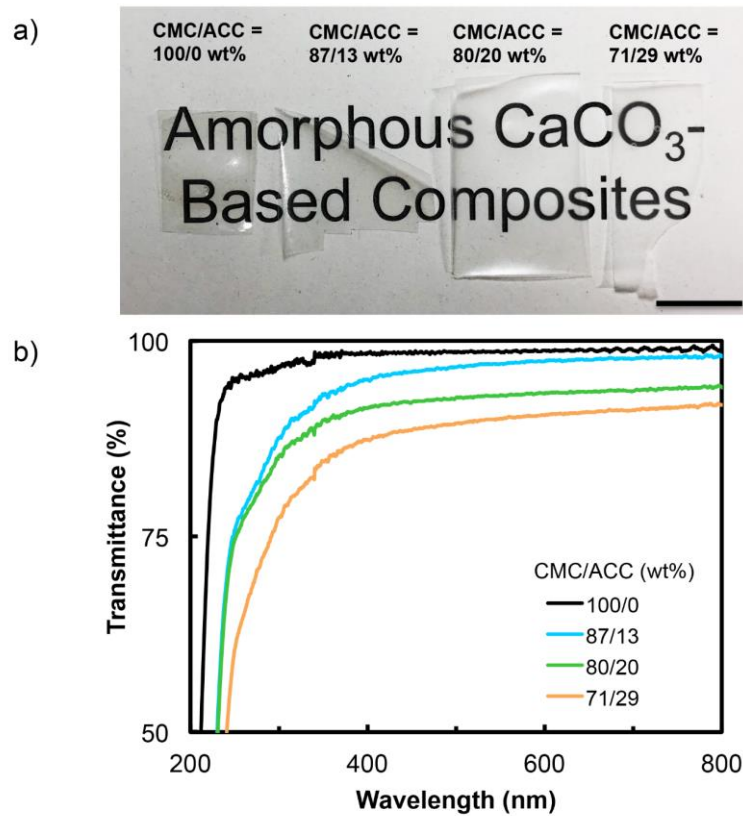
**Figure S3.** XRD patterns of carboxymethyl cellulose and CMC/ACC composites with different ratios of ACC. CMC/ACC = a) 100/0 wt%, b) 87/13 wt%, c) 80/20 wt%, and d) 71/29 wt%.



**Figure S4.** FT-IR spectra of carboxymethyl cellulose and the CMC/ACC composites with various ACC introduction. CMC/ACC = a) 100/0 wt%, b) 87/13 wt%, c) 80/20 wt%, and d) 71/29 wt%.



**Figure S5.** Energy-dispersive X-ray spectroscopy (EDX) of the CMC/ACC where ACC wt% equals 30 wt%. a) SEM image of the cross sectional (left) and the Ca<sup>2+</sup> K $\alpha$  X-ray elemental mapping of the material (right) b) EDX spectrum corresponds to the cross-sectional of the CMC/CNF/ACC material shown in a).



**Figure S6.** a) Photographic images of CMC containing 0~29 wt% of ACC, scale bar = 1cm b) UV-vis spectra of the CMC and CMC/ACC composite materials.