

Swelling resistance and water-induced shape memory performances of sisal cellulose nanofibers/polyethylene glycol/citric acid nanocellulose papers

Zuocai Zhang,¹ Yuqi Li,¹ Laifu Song,¹ Li Ren,¹ Xu Xu^{1,2}, and Shaorong Lu¹

¹Key Laboratory of New Processing Technology for Nonferrous Metals and Materials, Ministry of Education, School of Material Science and Engineering, Guilin University of Technology, Guilin, 541004, China

²Department of Mechanical, Automotive & Materials Engineering, University of Windsor, 401 Sunset Ave, Windsor, ON, Canada N9B 3P4

Correspondence should be addressed to Yuqi Li; liyuqi@glut.edu.cn and Shaorong Lu; lushaor@163.com

3. Results and Discussion

3.2. Water resistance of the CNF/PEG and CNF/PEG/CA paper.

3.2.1 Optical images of the contact angle of the CNF/PEG and CNF/PEG/CA paper.

The water contact angle can be used to compare the surface hydrophilicity of CNF/PEG and CNF/PEG/CA paper. The water contact angle of CNF/PEG paper is low, while adding CA it increases obviously. It illustrates that CA can reduce the hydrophilicity of the paper surface. Therefore, the permeation of water molecules is weakened, and the water-induced shape memory performance of the CNF/PEG/CA paper is affected in a certain degree.

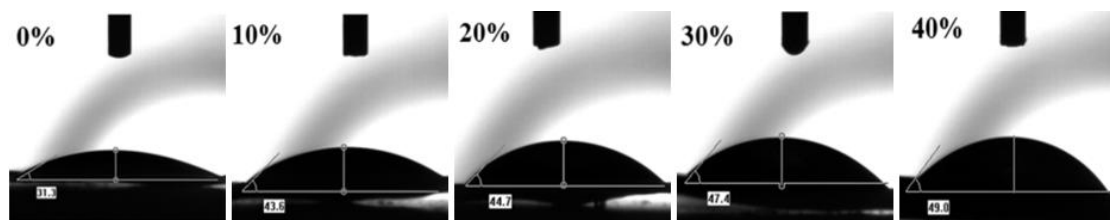


FIGURE 1s: Optical images of the contact angle of the CNF/PEG/CA paper

TG curves of the CNF/PEG and CNF/PEG/CA paper