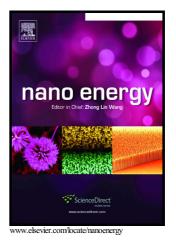
### Author's Accepted Manuscript

High-efficiency Ramie Fiber Degumming and Selfpowered Degumming Wastewater Treatment Using Triboelectric Nanogenerator

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#### **ACCEPTED MANUSCRIPT**

**High-efficiency** Ramie Degumming Fiber and Self-powered Degumming Wastewater Treatment Using Triboelectric Nanogenerator Zhaoling Li<sup>a,b,1</sup>, Jun Chen<sup>a,1</sup>, Jiajia Zhou<sup>b</sup>, Li Zheng<sup>a,c</sup>, Ken C. Pradel<sup>a</sup>, Xing Fan<sup>a</sup>, Hengyu Guo<sup>a</sup>, Zhen Wen<sup>a</sup>, Min-Hsin Yeh<sup>a</sup>, Chongwen Yu<sup>b,\*</sup>, Zhong Lin Wang<sup>a,d,\*</sup> <sup>a</sup>School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332-0245, United States. <sup>b</sup>Kev Laboratory of Science & Technology of Eco-Textile, Ministry of Education, College of Textiles, Donghua University, Shanghai, 201620, China. <sup>c</sup>School of Mathematics and Physics, Shanghai University of Electric Power, Shanghai, 200090, China. <sup>d</sup>Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences, Beijing, 100083, China. zlwang@gatech.edu (Zhong Lin Wang) yucw@dhu.edu.cn (Chongwen Yu) <sup>\*</sup>Corresponding author. <sup>1</sup>These authors contributed equally to this work.

#### Abstract

As one of the strongest and oldest natural fibers, ramie fiber has been widely used for fabric production for at least six thousand years. And degumming is a critical procedure that has been developed to hold the ramie fiber's shape, reduce wrinkling, and introduce a silky luster to the fabric appearance. Herein, we introduce a fundamentally new working principle into the field of ramie fiber degumming by using a triboelectric effect. Resort to a water-driven triboelectric nanogenerator (WD-TENG), the ramie fibers degumming efficiency was greatly enhanced with improved fiber quality, including both surface morphology and mechanical properties. Download English Version:

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