

Realization of a low carbon society through game changing technologies

R&D Project Title: Development of environmentally circulating polymer materials with high mechanical strength using bacterial nanocellulose

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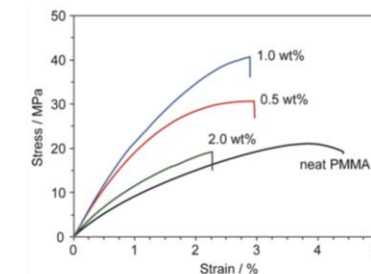
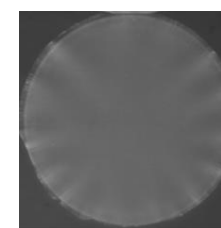
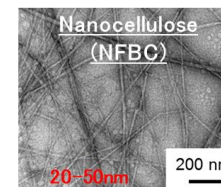
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Summary :

Nano-fibrillated bacterial cellulose (NFBC) can be produced from reproducible biomass such as sugars via a bottom-up process using cellulose-producing bacteria. NFBC has very long fiber lengths and excellent mechanical properties. In this research, we aim to establish a mass production technology for high-strength environmentally circulating polymer materials that takes advantage of the features of NFBC. The following issues will be examined to achieve for the above purpose.

- (1) Detailed structural analysis of NFBC
- (2) Preparation of NFBC simple substance molded body (sheet, fiber, bulk) and confirmation of structure and physical properties
- (3) Surface modification of NFBC by silane coupling
- (4) Surface modification of NFBC by grafting
- (5) Increased strength by combining surface-modified NFBC and green plastic



Silicated NFBC/PMMA nano-composite