

Dispersion and Dimension Measurements of Cellulose Nanofibers with AFM

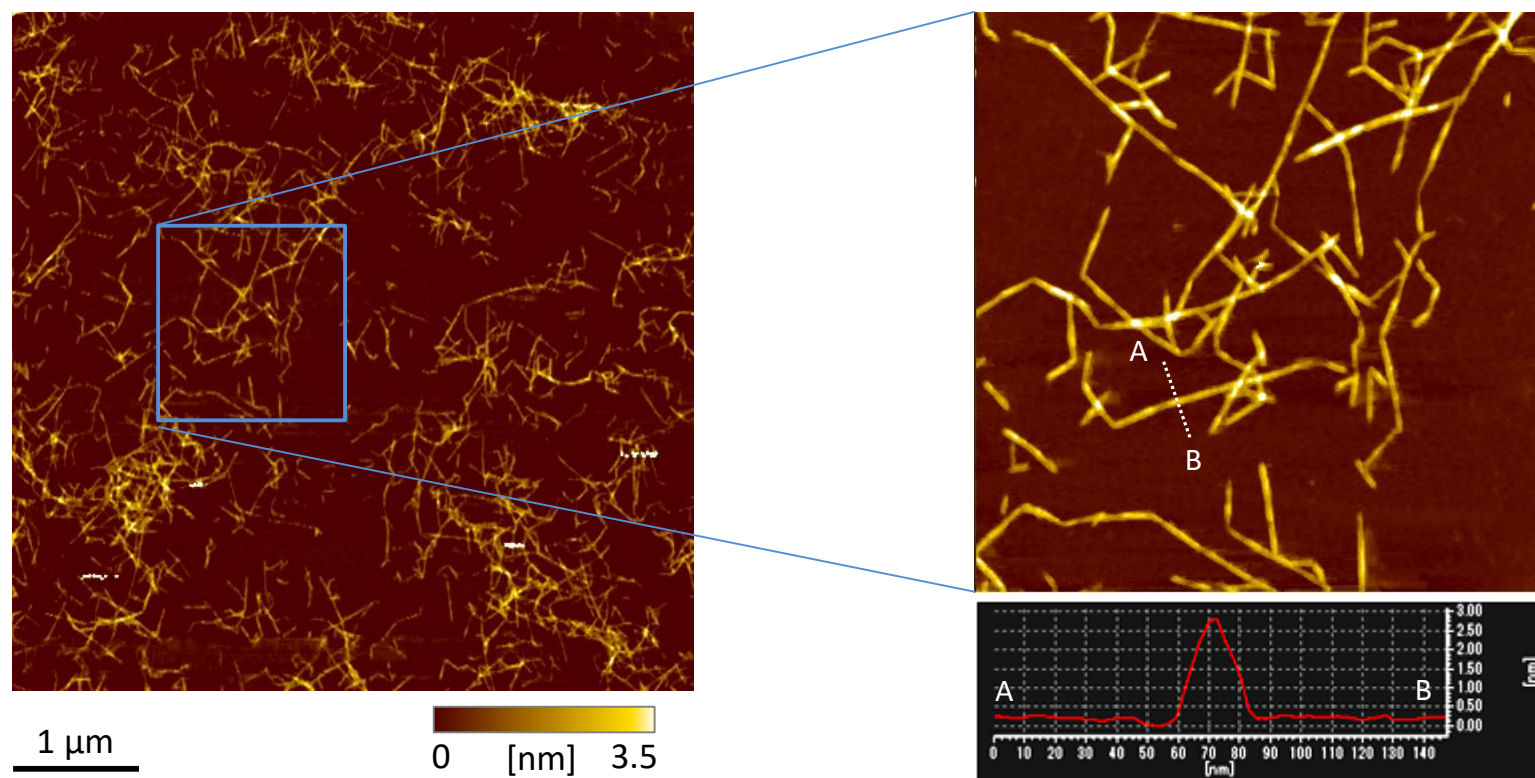


Fig.1: High-resolution AFM imaging of cellulose nanofibers using Hitachi AFM5500M

A dilute solution of chemically manufactured cellulose nanofibers (CNF) was prepared first, and then dropped onto a freshly peeled mica substrate. Once dried, the sample was characterized by AFM imaging.

Fig. 1 shows AFM topography images of the resulting cellulose nanofibers on the surface. From a lower-magnification image (left), the visualization of dispersion state of CNF is observed. In the high-magnification image (right), each individual nanofiber is well resolved. The length and height of the nanofiber are clear and measured directly by the AFM. As shown in the cross-section profile corresponding to the line drawn in the high-resolution image (right), the diameter of the CNF is approximately 3 nm.

This application note demonstrates that the AFM can be used for quantitative quality control of CNF because it has the capability of high-resolution and true 3D measurement at sub-nanometer level.

Nanomaterial

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Recommended configuration	Remarks
AFM5500M	
• Cantilever: SI-DF3P2	



AFM5500M

