

Dendron-Modified AFM Tips for Sensing DNA and Proteins and Mapping m-RNA

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A second-generation dendron and a third-generation dendron have been applied to AFM tips to control spacing between the immobilized biomolecules on them. For DNA-DNA interaction, both binding and unbinding events were observed, and enhanced sharpness of the force histograms was an additional advantage from the controlled surface.

With the same approach, the interaction between the signal transducing proteins were examined, and quantitative information at the single molecule level was obtained. Also, mapping of a particular RNA on frozen-cut tissue surface has been tried with the DNA-modified tips.

In order to understand the interaction between RNA and DNA, two different model systems were studied, and the investigation on the tissue surface showed that mapping was in harmony with the fluorescence mapping and the new tool detected mRNAs in the region that the conventional analytical tool could not see.