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(54) Title: ATOMIC FORCE MICROSCOPY APPARATUS AND A METHOD THEREOF

(57) Abstract

The microscopy apparatus comprises a cantilever (10) having an atomically sharp tip (11) and a detector (15) which monitors the deflection of the tip (11) as a measure of the atomic force between the tip and a sample. A piezotransducer (12) is provided on the end of the cantilever (10) distant from the tip (11). The piezotransducer (12) generates high frequency vibrations which are applied to the cantilever. The vibrations transmitted to the tip (11) are modulated using means such as a second piezotransducer (20) in contact with the sample and the movement of the tip (11) is then sampled by the detector (15) at a much lower frequency. The microscopy apparatus and method described is able to maintain sensitivity to the properties of the sample whilst retaining sensitivity to the output of the apparatus. The apparatus and method is particularly suited of the study of time-dependent physico-chemical and physico-mechanical properties up to nanosecond and sub-nanosecond time resolution.

