AFM을 이용한 시료 분석시 레이저 빔에 의한 이미지 왜곡 효과

김영훈*
광운대학교 화학공학과
(korea1@kw.ac.kr*)

Atomic force microscope (AFM) permits high-resolution images to be obtained in air and water media, and has been used extensively in various research areas, such as nano/bio-technology and surface chemistry. The optical beam deflection method, which is used in AFM to obtain surface images, may distort the resulting image. Namely, the flexible and long cantilever is easily overdamped by the laser radiation pressure, resulting in steady deflection of the cantilever (<1 nm). This deflective force distorts the image and influences the F-D curve. The present study investigated the effect of laser radiation pressure on image distortion. Our goal was identification of the optimal spot for laser reflection that would reduce the intrinsic distortion of the cantilever induced by laser radiation pressure. As a proof-of-concept test, two grating samples (with step heights of 150 and 18 nm for TGX01 and TGZ01, respectively) were examined using a NSC36 series cantilever in air and water media.