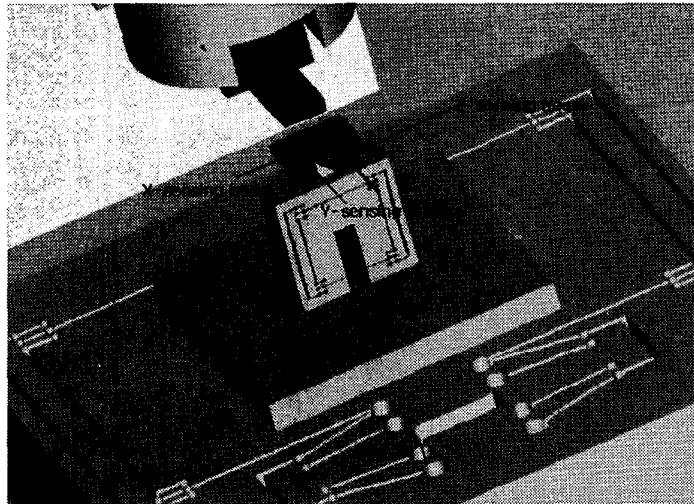


AFM 시스템을 위한 XYZ 3축 스테이지의 설계 The design of XYZ 3-axis stage for AFM system

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To Establish of standard technique of length measurement in 2D plane, we develop AFM system. The XY scanner scans the sample only in XY plane, while the Z scanner scans the specimen only in Z-direction. Cantilever tip is controlled to has constant height relative to specimen surface by feedback of PSPD signal. To acquire high accuracy, Z-axis measuring sensor will be added.(COXI or others). In this paper we design XYZ stage suitable for this AFM system. For XY stage, single module parallel-kinnematic flexure stage is used which has high orthogonality and minimum out-of-plane motion. To obtain best performance optimal design is performed. For XY stage, to be robust about parasitic motion optimal design of maximizing Z and tilt stiffness is performed under the constraint of motion range and stage size. And for Z stage, optimal design of maximizing 1st resonant frequency is performed. Because if resonant frequency is get higher, scan speed is improved. So it makes reduce the error by sensor drift. Resultly XYZ stage each have 1st natural frequency of 115Hz, 201Hz, 2.66kHz and range 109 μ m, 110 μ m, 12 μ m.



참고문헌

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