

**[N-01]**

**전계효과 트랜지스터 캔틸레버를 이용하여 접촉 및 비접촉 모드로  
표면 전위 측정**

서문석, 신진국, 국양\*

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In this work, we have been developed a silicon-based scanning probe with a field effect transistor (FET). The FET is integrated onto an atomic force microscope cantilever with a sharpened tip. From the sharpness of the measured surface potential, we estimated that the spatial resolution of the scanning FET microscope is better than 300 nm when determined by the edge of patterned SiO<sub>2</sub> islands. The potential noise of, 10 meV, which is equivalent value of 10e - 100e for an isolated charge, is achieved at 10 kHz. A similar surface potential can be obtained if there is induced charge in the presence of the probe. Similar, but slightly weaker, surface potential images were obtained with a probe-sample gap of 10 nm, ruling out the contribution of the induced charge. It is not likely that surface charge is localized only at the protruded mesa pattern.