

Abstract Submitted  
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**Dielectrophoretic Force Microscopy** AL HILTON, BRIAN LYNCH, GARTH SIMPSON, Purdue University Dept. of Chemistry — Dielectrophoretic force microscopy, a novel scanning probe microscopy technique in which a tip-sample dielectrophoretic force is incorporated into the feedback mechanism of a standard atomic force microscope, is shown to allow for the facile noncontact imaging of the dielectric properties of systems in aqueous media. By tuning the ac frequency, dielectric spectroscopy can be performed at solid/liquid interfaces with high spatial resolution. In studies of cells, the frequency-dependent dielectrophoretic force is sensitive to biologically relevant electrical properties, including local membrane capacitance and ion mobility. Additionally, the presence of a dielectrophoretic force reduces the mechanical tip-sample contact forces that frequently hinder microscopy studies of soft, deformable systems. Consequently, dielectrophoretic force microscopy is well suited for *in situ* scanning probe microscopy studies of biological systems.

Al Hilton  
Purdue University Dept. of Chemistry

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