

Tuesday Morning, October 19, 2010

Exhibitors & Manufacturers Technology Spotlight

Room: Southwest Exhibit Hall - Session EW-TuM

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Moderator: D.J. Surman, Kratos Analytical Inc., R.

Langley, Consultant

10:20am **EW-TuM8 Multifrequency Techniques for AFM/SPM**, A. *Gannepalli*, R. *Proksch*, Asylum Research, S. *Jesse*, ORNL

In multifrequency AFM, as the name suggests, the AFM cantilever is excited at more than one frequency, typically two, but could be more. The motivation is to increase the amount of information on the tip-sample forces that can be measured. When the excitation frequencies coincide with the resonant modes of the cantilever, it is called modal imaging. In harmonic imaging the excitation frequencies are the harmonics of a resonant mode. A different technique called Dual AC Resonance Tracking (DART) uses two excitation frequencies to track the contact resonance of the cantilever in contact resonance applications. A methodology to extract the conservative and dissipative nature of the tip-sample interactions in DART mode will be presented. A new technique called Band Excitation, where the cantilever is excited in a band of frequencies, allows mapping conservative interactions, nonlinearities, and energy dissipation at the nanoscale. The presentation will focus on the technology, instrumentation, and application examples.

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