Abstract Submitted
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**Multi-scale Imaging of Cellular and Sub-cellular Structures using Scanning Probe Recognition Microscopy.**[1] Q. CHEN, Y. FAN, V.M. AYRES, L. UDPA, Michigan State University, A.F. RICE, Veeco Instruments — Scanning Probe Recognition Microscopy is a new scanning probe capability under development within our group to reliably return to and directly interact with a specific nanobiological feature of interest. In previous work, we have successfully recognized and classified tubular versus globular biological objects from experimental atomic force microscope images using a method based on normalized central moments [ref. 1]. In this paper we extend this work to include recognition schemes appropriate for cellular and sub-cellular structures. Globular cells containing tubular actin filaments are under investigation. Thus there are differences in external/internal shapes and scales. Continuous Wavelet Transform with a differential Gaussian mother wavelet is employed for multi- scale analysis. [ref. 1] Q. Chen, V. Ayres and L. Udpa, "Biological Investigation Using Scanning Probe Recognition Microscopy," Proceedings 3rd IEEE Conference on Nanotechnology, vol. 2, p 863-865 (2003).

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