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New Nanoindentation and Scanning Probe Tools and Techniques.

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Abstract – Recent developments in tools and techniques are making possible mechanical test that only a few years ago would have been impossible. These developments will be discussed and reviewed in this work.

Recent developments in the tools and techniques associated with Nanoindentation and probe scanning techniques together with new sample preparation tools such as focused ion beam systems are making possible mechanical test that only a few years ago would have been very difficult. New calibration techniques provide simpler verification of testing system performance and accuracy. Quantitative sample scanning equipment and techniques provide the user with new tools for the mechanical characterization of miniature structures and allow for new types of mechanical properties testing of films and small volumes. Various applications of these tools to the characterization of the mechanical properties of materials on a submicron scale will be discussed. Indentation, tensile, scratch and compression tests are all possible and examples will be shown.