

FUNDAMENTALS OF NANOINDENTATION *

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Nanoindentation is a widely used technique for probing the mechanical properties of materials at very small scales. Developed largely over the last decade, nanoindentation is used routinely to mechanically characterize thin films, thin surface layers, and very small volumes of material. One of the great advantages of nanoindentation is that properties such as the hardness and elastic modulus can be measured by simple analyses of indentation load-displacement data alone, thereby obviating the need to image the hardness impression and facilitating property measurement at the sub-micron scale. Techniques for measuring mechanical properties by nanoindentation are discussed in relation to the underlying principles of mechanics on which they are based.

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