



Nanometer-Scale Thermal Probes for Materials Science, Manufacturing, and Metrology

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This talk describes nanometer scale thermal probes and their application to materials science, nano-manufacturing, and nano-metrology. Atomic force microscope (AFM) cantilevers with integrated heater thermometers have been an active area of research and investigation for nearly 30 years. Over this time there has been significant maturation of the underlying technology, development of deep fundamental understanding of nanometer-scale heat flow, and introduction of a host of applications that have been pursued by dozens of research groups all over the world. The technology has also been commercialized and is widely used for materials characterization and nano-metrology in the automotive, semiconductor, and pharmaceutical industries. This talk describes the development of the technology from its early days through recent developments and possible future applications.