A New Method for Measuring the Thermal Conductivity of Thin Films

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A new, relatively inexpensive, easy-to-use instrument has been developed for measuring the thermal conductivity of thin films based on a differential photoacoustic method. Measurements made on silicon dioxide and silicon nitride are consistent with those reported previously for a different technique. In addition, the room temperature thermal conductivity of conventional polymer thin films and plasma deposited thin films has been determined relative to thermally grown silicon dioxide. Knowledge of the thermal conductivity of thin films, which is critical for many applications, can now be obtained for any thin film which can be deposited on a high thermal conductivity substrate.