THERMAL CONDUCTIVITY OF DELAMINATED LAYERS CALCULATED FROM STHM AND AFM DATA

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Abstract

The presented method enables to determine thermal conductivity of delaminated thin films using scanning thermal microscopy and AFM data together with numerical simulation of heat flow using FEM. SThM is a scanning probe microscopy technique for mapping temperature and thermal properties of solid surfaces with very high resolution. It has been used for different thermophysical properties determination in past and it delivers lateral resolution overcoming any other thermal technique. Absolute determination of thermal conductivity using SThM is however still problematic due to complex nature of heat exchange between probe and sample. In this article we present a method for thin film thermal conductivity determination based on use of thin film defects --- delaminations.

Keywords: Scanning thermal microscopy, thin films, thermal conductivity

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