PARAMETER ESTIMATION OF ELLIPSOMETRY MEASUREMENTS

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Abstract

Ellipsometry is a unique technique of great sensitivity for in situ non-destructive characterization of surfaces utilizing the change in the state of polarization of a light-wave probe which is extensively used in the semi-conductor industry. To relate ellipsometric measurements to surface properties (as eg layer thickness changes in the range of nm or chemical composition), Bayesian probability theory is used. The parameter estimation process is complicated by the incomplete phase information of the measured data. Examples of 3-D surface reconstructions of samples after plasma exposure demonstrate the tremendous information gain due to the Bayesian analysis.

References:

Key Words: Parameter Estimation, Bayesian Probability Theory