



Ultra-thin Film Characterization Using Tunneling Ellipsometry

Characterizes Thin Films Under 100 Angstroms

A solid immersion tunneling ellipsometer can accurately measure properties of thin and ultra-thin films (e.g., less than 100 Angstroms thick). A solid immersion apparatus (e.g., a prism or an objective lens in combination with the solid immersion lens) facilitates optical tunneling and provides information to determine characteristics (e.g., thickness or index of refraction) of samples such as thin films or ultra-thin films. The ellipsometer receives one or more signals that correspond to at least one ray of polarized light provided an angle greater than the critical angle of a solid immersion apparatus. Using these signals, it determines one or more measured parameters as a function of the signal. The device can then determine at least one characteristic of the thin film by fitting the measured parameters into a model.

Technology ID

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Category

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Accurate Thin Film Measurements

Current ellipsometers may be unsuitable for measuring characteristics for films thinner than 100 Angstroms. Existing ellipsometers cannot accurately measure ultra-thin film characteristics, such as index of refraction and/or thickness, possibly because their accuracy is inadequate when such ultra-thin films are being characterized. This new ellipsometer provides accurate ellipsometric measurements for thin films, especially ultra-thin films thinner than 100 Angstroms.

BENEFITS AND FEATURES:

- Accurate ellipsometric measurements
- Thin films and ultra-thin films (thinner than 100 Angstroms)
- Characterizes thin films
- Measures thickness or index of refraction

APPLICATIONS:

- Measuring properties of thin and ultra-thin films (thinner than 100 Angstroms)
- Measuring thickness or index of refraction of thin films

Phase of Development - Proof of Concept

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