



# 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.

### MN-IP Try and Buy

#### Try

- \$5000 for a six month trial
- Trial period can be up to 18 months
- Trial fee is waived for MN companies or if sponsoring \$50,000+ research with the University
- No US patent costs during trial

#### Buy

- \$25,000 conversion fee (TRY to BUY)
- Royalty rate of 2%
- Royalty free for first \$1M in sales

## Technology ID

z02058

## Category

Engineering & Physical  
Sciences/Instrumentation,  
Sensors & Controls  
Engineering & Physical  
Sciences/Materials  
Engineering & Physical  
Sciences/Nanotechnology  
Engineering & Physical  
Sciences/Photonics  
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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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