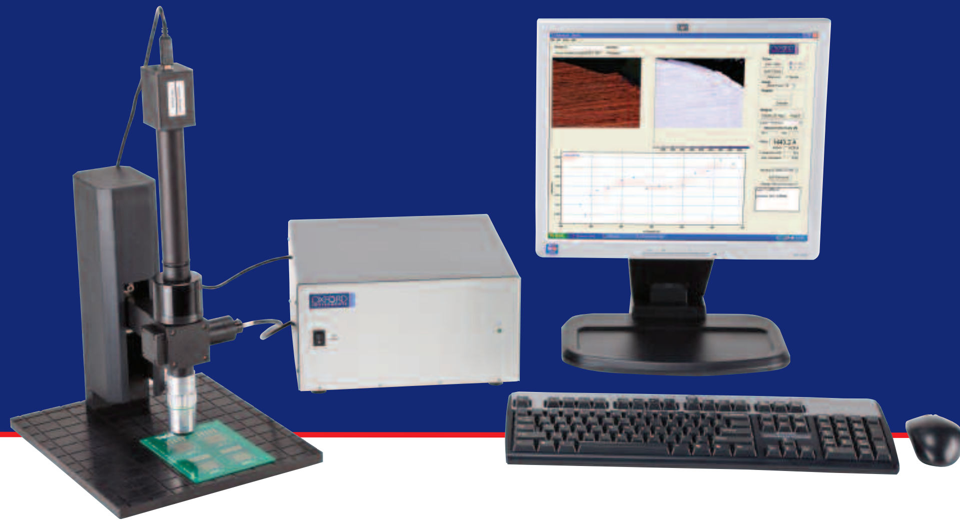

Features

OSPrey800 measures OSP coating thickness and quality *in-situ* on PCB/PWB. Measurements can be performed at various stages in its' lifecycle allowing the monitoring of adverse effects due to production steps and ageing on the OSP coatings. Predictions of solderability of the protected surfaces, for example, are possible at any stage during the PCB/PWB lifecycle.

- **Metrology Principles**
  - Non destructive *in-situ* measurement of OSP coating thickness on PCB/PWB using reflectometry without any sample preparation
  - A target area 330 µm x 265 µm is investigated in each measurement by mapping independent side-by-side lying 1 µm x 1 µm locations
  - Measurements of OSP coatings on rough surfaces are possible
  - Coatings of thicknesses 0.035 - 3 µm can readily be measured and analyzed
  - Two-dimensional rendering of the OSP thickness morphology yields coating quality.
  - Specific regions of interest can be targeted on a board allowing pointed quality control metrology, consequential failure analysis and troubleshooting of the OSP layer
  - Small observation spot size provides the capability to investigate the OSP coating of individual features such as contact pads, etc.
  - **OSP**rey800 metrology does not have any adverse effects on the PCB/PWB or on the OSP coating
  - Measurements at various stages of the PCB/PWB lifecycle allow monitoring of undesirable effects due to production steps and ageing on OSP coatings
- **Excitation**
  - Multi-wavelength optical excitation 420 - 665 nm
- **Optics**
  - Imaging system with 20x optical magnification
- **Analysis**
  - FILMeasure software for instrument control and data analysis
  - Processing of wavelength dependent reflectance spectra from OSP coated PCB/PWB
  - Programmable recipe editor for model and initial parameter definition
- **Sample Stage**
  - Fixed in-plane XY sample stage
  - Motorized z-axis optical column with autofocus
- **Dimensions**
  - Measurement Stage: 25 W x 30 D x 46.5 H (cm)
  - Controller Unit: 27.5 W x 20.7 D x 14.5 H (cm)
- **Weight**
  - Measurement Stage: 6.6 kg (14.5 lbs)
  - Controller Unit: 5.7 kg (12.5 lbs)

click onto **www.oxford-instruments.com** for more information

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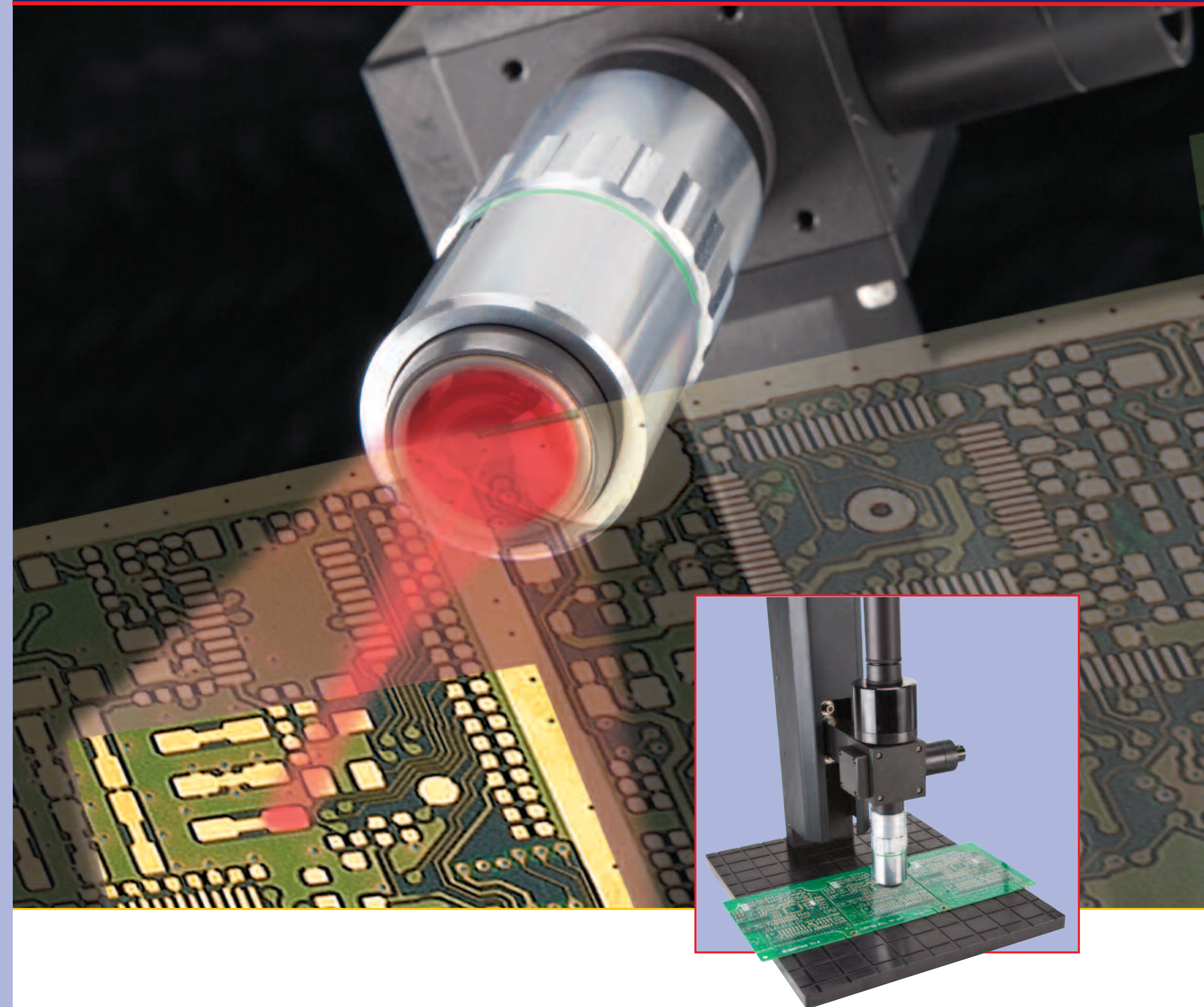
OSPrey800

The revolution in OSP thickness measurement



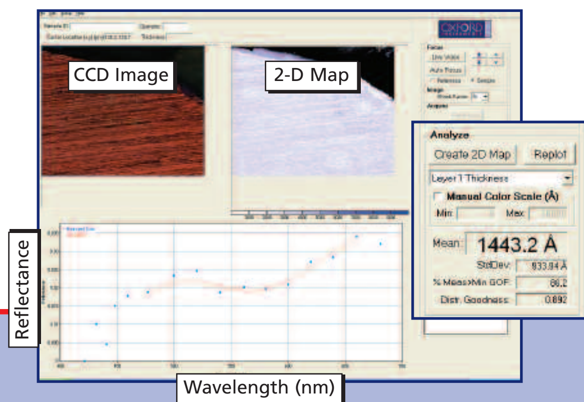
The Business of Science™

Determine OSP coating thickness and integrity on PCB/PWB

At last... non-destructive measurement on real-time production boards

OSPrey800 provides spectroscopic non-destructive optical metrology of OSP coatings using reflectometry. Thickness Measurements are performed *in-situ* and require no sample preparation. **OSP**rey800 measurements do not have any adverse effects on the PCB/PWB.

- **Accurate, non-destructive OSP thickness measurement**
- **Measure the real-production sample**
  - **No more test coupons**
  - **No sample preparation**
- **Maps OSP coverage of individual pads**
- **Intuitive controls designed for use by production personnel**

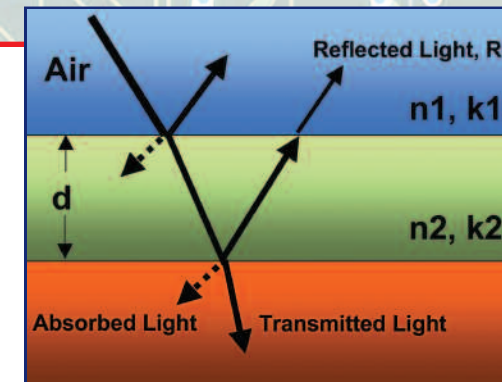


Introducing **OSP**rey800

OSPrey800 verifies the reliable application of OSP coatings returning quantitative thickness, integrity, reliability and film morphology observations of OSP on PCB/PWB.

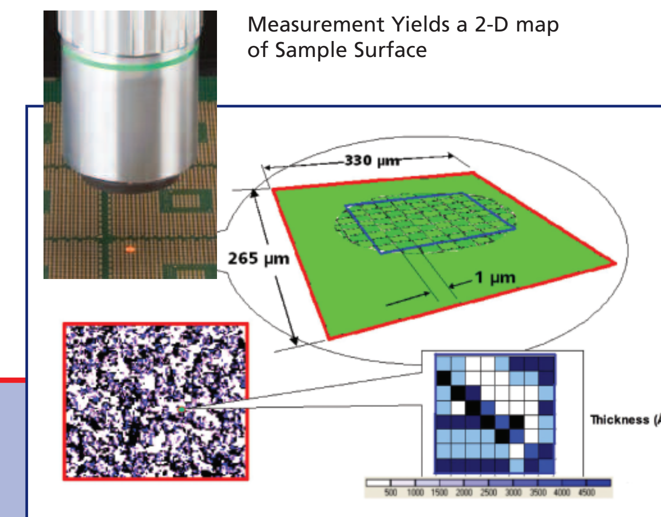
- *In-situ* non-destructive measurements of OSP film thickness on PCB/PWB.
- Multiple thickness measurements of independent regions of 1µm x 1µm surface area within a 330 µm x 265 µm total surface area of the OSP film are simultaneously performed.
- Measurements of OSP coatings on rough surfaces are possible.
- Typical coating of thicknesses from 0.035 - 3 µm can readily be measured and analyzed.
- Rendering of two-dimensional thickness maps of the OSP layer.
- Specific regions of interest can be targeted on a PCB/PWB allowing pointed quality control metrology, consequential failure analysis and troubleshooting of the OSP layer.

Intuitive User Interface



Measurement principle

The **OSP**rey800 measures thin-film characteristics by analyzing the spectral interference exhibited by reflecting light over wavelengths in the visible spectrum. Light reflected from the thin-film surface and the substrate surface will exhibit phase differences which lead to an interference pattern. This interference pattern exhibits intensity oscillations. The **OSP**rey800 analyzes the frequency and amplitude of these oscillations to determine the thickness and integrity of thin films.



Measurement Yields a 2-D map of Sample Surface

Why choose OSP metrology?

UV-Visible Characterization
- No information on OSP thickness variation
- Destructive – requires test coupons
- Dependant on correct density factor for accuracy

Focused Ion Beam Method
- Labour intensive and expensive
- Destructive – requires sample coupons
- No information out of cross-sectioned plane

Sequential Electrochemical Reduction Analysis
- High potential of faulty measurement
- Destructive – requires test coupons
- No information on geometry of OSP layer

OSPrey800 **Metrology**
- Highly accurate measurement preformed *in-situ*
- Characterizes real production boards – No test coupons
- Quantifies thickness, integrity and reliability of OSP coating

Unique Features

OSPrey800 **offers non-destructive optical metrology of OSP coatings.**

- A target area 330 µm x 265 µm is investigated in each measurement by mapping independent side-by-side lying 1 µm x 1 µm locations.
- Two-dimensional rendering of the OSP thickness morphology yields coating quality.
- Performed *in-situ* and requires no sample preparation after OSP application.
- **OSP**rey800 metrology does not have any adverse effects on the PCB/PWB.
- Measurements at various stages of the PCB/PWB lifecycle allow monitoring of undesirable effects due to production steps and ageing on the OSP coatings.

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