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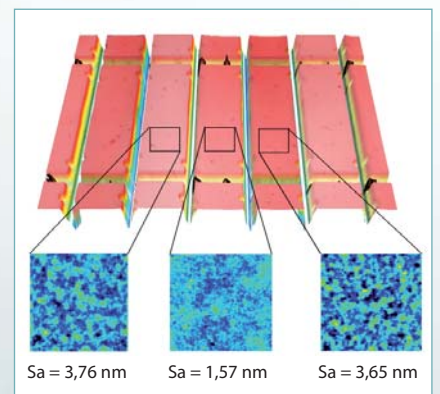
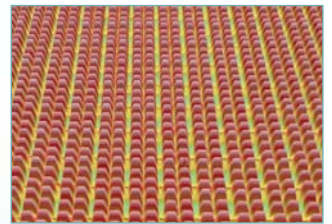
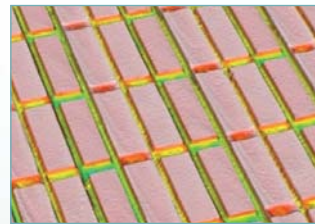
SENSOFAR®

High-end 3D Optical Profiler

High Resolution Thin Film Metrology

Non-contact Surface Metrology for Flat Panel Displays (FPD)

- Optical profiler and integrated spectroscopic reflectometer
- Automated 3D topography measurement
- High lateral resolution (0.15 μm)
- Thickness with unprecedented resolution (0.1 nm)



RGB filter roughness analysis



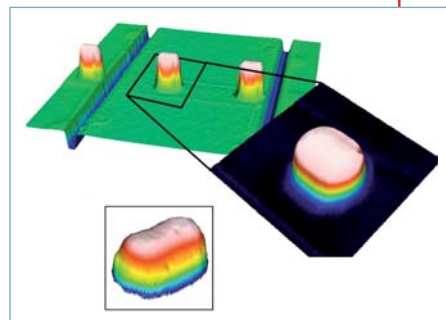
One key component of the flat panel display industry is the RGB color filter array. Such arrays are manufactured on glass and used to filter the color information in the image on the display. Many non-contact measurements on the surface of the glass are needed, including filter height characterization, photo spacer characterization and defect analysis. **SensoMAP** software is used to analyze manual and semiautomatic measurements. In addition, the system is equipped with **SensoPRO** for completely automatic operation.

Step height RGB filter characterization

The height of the filters is characterized with a low magnification objective. The field of view is up to 5 mm with 1 nm z resolution and a measuring time of a few seconds. The height is characterized statistically over hundreds of individual filters.

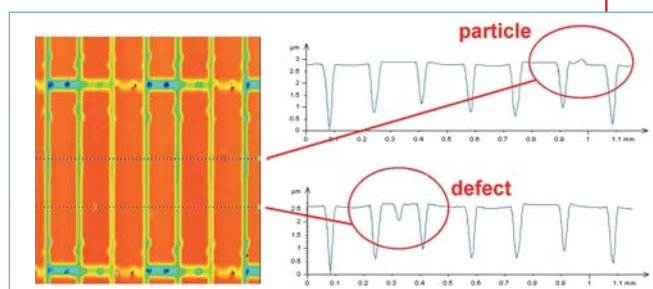
Photo spacer characterization

Photo spacers are used to align and separate the RGB color filter glass and the light modulation device (LCD, TFT, etc.). **SensoMAP** or **SensoPRO** software can be used to characterize the XY position, presence or absence, height and diameter of each photo spacer. For photo spacer recognition, an advanced analysis based on thresholding and 3D binarization is used to isolate each bump from the rest of the surface. Photo spacer tip shape and roughness can also be characterized. The most relevant shape parameters that are evaluated are the radius of curvature, aspheric components on the tip, height, roundness, perimeter, area, form factor, aspect ratio, compactness and orientation. A roughness evaluation is achieved through a filtering process that isolates the shape components of the tip from the high frequency details.



Defect analysis

High- and low-magnification optics are used to identify and subsequently measure defects on the surface of the RGB color filter array. Appropriate 3D information on the height, area and volume of a defect can be used to determine whether it affects the overall performance of the filter.



Performance

3D Profiling Techniques: PSI, ePSI and VSI
Objectives: 2.5X, 5X, 10X, 20X, 50X and 100X
Field of View: from 5.0 x 3.8 mm to 0.06 x 0.045 mm
Field Lens: fixed 0.5X or 1X lens
Measurement Array: 768 x 576
Light Source: Blue LED (460 nm) and White LED
Z Axis Measuring Range: up to 10 mm
Z Axis Range: 50 mm
Height Repeatability: 0.1 nm (0.03 nm with optional Piezo)
Scan Speed: from 3 to 15 µm/s
Step Height Accuracy: <0.8%
Step Height Repeatability: <0.1%
Thin Film Thickness Resolution: 0.1 nm
Thin Film Thickness Repeatability: 0.3 nm
Smallest Spot Size for Thin Film Thickness: 7 µm

System

XY Stages: 100x75, 150x150, 250x200 and 300x300 mm
Computer System: Latest Intel-based computer
Software: SensoSCAN, SensoMAP and SensoPRO optional
Vibration Isolation: Optional

Power Requirements

Input Voltage: 110/220Vac, single phase 50/60Hz

Environment

Temperature Range: 20 +/- 2 degree °C
Humidity Range: 50 +/- 5% RH

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