IMAGING SPECTROSCOPIC ELLIPSOMETER FOR OLED APPLICATION

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Flat panel display technology demands the layer characterization within small areas. OLED technology uses multi-layer stack that is why ellipsometry is mandatory metrology for characterization.

Considered that the layer structure is complex and extremely small that is why the high lateral resolution spectroscopic ellipsometry (SE) is preferred to determine the optical properties of the layers.

To get 2D thickness map and 2D refractive index map simultaneously at high lateral resolution, imaging SE metrology is developed. Metrology is based on microscope type arrangement including polarization state elements. By using basically microscope and extended with spatial filter to define the incidence plane and using polarization element to define the incidence polarization state in the illumination path. Moreover, compensator and analisator are used in the detection path to get ellipsometry data on 2D CCD device. Ellipsometry data is calculated from Fourier components at given compensator positions.

In this work, we present the preliminary result of unique iSE metrology on multi-layer stack.

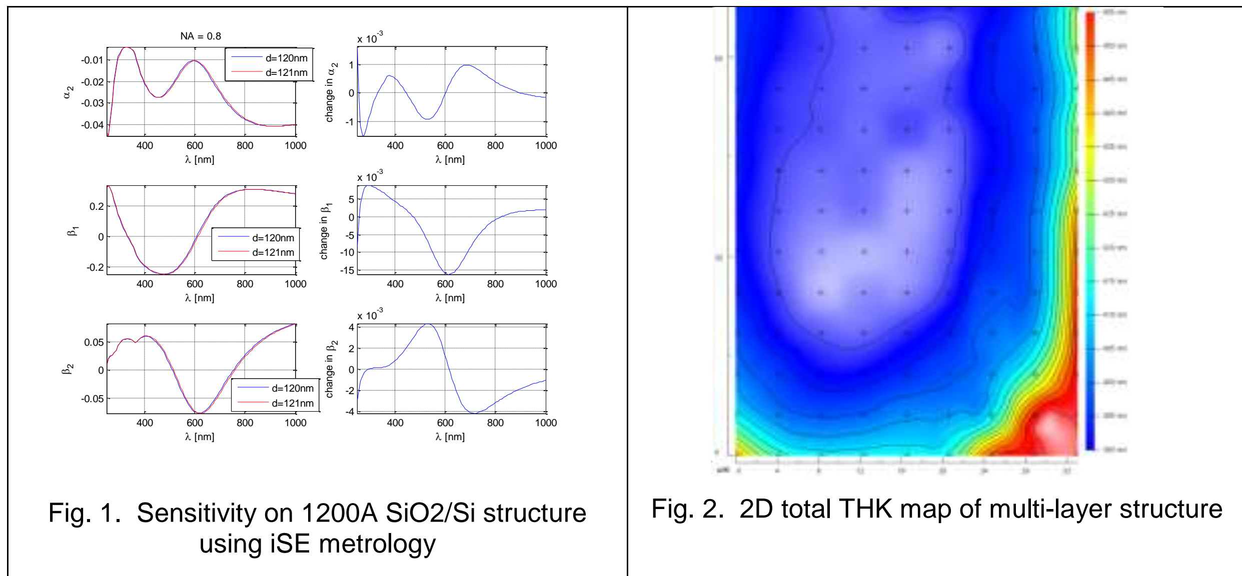

Fig. 1. Sensitivity on 1200A SiO2/Si structure using iSE metrology

Fig. 2. 2D total THK map of multi-layer structure

Keywords: ellipsometry, imaging

References

[1] High-resolution imaging ellipsometer, Qiwen Zhan and James R.Leger, 1 August 2002 / Vol. 41, No. 22 / APPLIED OPTICS [2]