Thursday Morning, November 16, 2006

Exhibitor Workshop
Room Exhibit Hall - Session EW-ThL

Exhibitor Workshop
Moderator: R.A. Childs, MIT

11:00am **EW-ThL1 MM-16: New Spectroscopic Ellipsometer for Fast and Simple Advanced Materials Characterization***, **P. Tivin**, E. Teboul, Y. Ji,* HORIBA Jobin Yvon Inc

HORIBA Jobin Yvon now introduces the MM-16, a new, low-cost spectroscopic ellipsometer dedicated to advanced characterization of a broad range of materials. In addition to the standard measurements of film thickness and optical constants, the MM-16 provides the full polarization states matrix (Mueller matrix) of a sample in less than 2 seconds. This additional capability allows accurate, simple and easy characterisation of anisotropy, retardance and degree of depolarization. With options such as automatic variable angle of incidence (VASE), motorized mapping stage and micro spot, the MM-16 is a powerful and cost effective tool for fast, comprehensive, and simplified materials characterization. Results obtained with the MM-16 for a wide range of applications such as: Displays with Liquid Crystals, ITO, polymers; Coatings with TiO@sub 2@, ZnO, Al@sub 2@O@sub 3@, Y@sub 2@O@sub 3@, ZrO@sub 2@; Semiconductor with AlGaN, AlN, TiN are presented.

11:20am **EW-ThL2 Flexible 200 mm ALD Oxide, Nitride and Metal Processes***, **N. Singh**,* Oxford Instruments Plasma Technology, UK, United Kingdom*; C. Hodson,* Oxford Instruments Plasma Technology, UK

Al@sub 2@O@sub 3@, HfO@sub 2@, TiN and Ru films have been deposited in the Oxford Instruments flexible 200 mm ALD reactor. The effects of process parameters such as process temperature, precursor dosage and plasma power on film quality were investigated. Film thickness was obtained from nanospec measurements. XRD, AES, RBS techniques were used to characterize the stoichiometry, film structure and contamination levels. Four point probe was used to measure the resistivity of metallic films. TiN films deposited from TiCl@sub 4@ and N@sub 2@ / H@sub 2@ plasma showed self limiting behaviour at a deposition rate of 0.33Å/cycle. The resistivity at 350°C deposition temperature was < 170µ@ohm@cm. The chlorine impurity in TiN varied from 2.6% to 1.2% for plasma exposures of 3 sec and 5 sec respectively. Longer plasma exposures also lowered the resistivity values from 170 to 140µ@ohm@cm at 350°C deposition temperature. Hafnium Oxide films deposited from TEMAH and O@sub 2@ plasma showed saturation at a deposition rate of 1.1Å /cycle. The dielectric constant of the film was found to be ~20. The same film deposited thermally using H@sub 2@O as the oxidant saturated at 0.8Å/cycle and had a lower dielectric constant ~18. A compositional ratio of [O]/[Hf] 2.0 to 2.13 was obtained from RBS. The C content in plasma HfO@sub 2@ films was < 2%. Aluminum oxide films deposited from TMA and O@sub 2@ plasma showed self limiting behaviour at 1.2Å/cycle at 200°C. The total cycle time was < 5 sec with a 20 msec TMA pulse suffcient to provide self limiting ALD growth. Ruthenium (Ru) films deposited from Ru(EtCp)@sub 2@ and oxygen plasma showed self limiting behaviour at a deposition rate of 0.37Å/cycle on 100Å thick TiN layers. The film resistivity was < 20µ@ohm@cm at 350°C. The impurities (C, H, O) in the deposited films are < 2%. By varying the plasma conditions and oxygen composition, ruthenium oxide films can be deposited.

11:40am **EW-ThL3 Introducing the Dektak D150 Stylus Profiler: Performance, Stability and Value***, **T. Ballinger**, G. Anderson, J. Horwitz,* Veeco Instruments Inc.

Introducing the Dektak D150 Stylus profiler. Veeco's 7th generation stylus profiler expands the capabilities of stylus profiling. A quantum advance over the industry standard, the Dektak 6M profiler, the D150 adds 3D mapping and 6" programmability to the manual capability of the former Dektak 6M, yet maintains an affordable price point for value conscious consumers. Low force scanning, high accuracy stress measurements, accurate angle determination for advanced applications are but a few of the enhancements. Add in a complete rewrite of the basic Dektak software architecture to create an intuitive user interface with unparalleled analytical capabilities.

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