Réunions scientifiques

Séminaires

Séminaire SOLEIL

XPS Measurements for Probing Dynamics of Charging

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Invité par Mathieu SILLY

Lundi 30 novembre à 11h00
Grand Amphi SOLEIL

The technique of recording X-ray photoemission data while the sample is subjected to ±10.0 V (d.c.) or square-wave pulses (a.c.) with varying frequencies in the range of 10^{-3} to 10^{3} Hz for probing charging/discharging dynamics of dielectric materials, will be presented. Application of this technique introduces charging shifts as well as broadening of the peaks which depend nonlinearly on the polarity, as well as on the frequency of the pulses applied. These changes have been measured on; (i) an artificially created dielectric sample consisting of a Au metal strip connected externally to a series resistor of 1 Mohm and a parallel capacitor of 56 nF, and several real dielectric films, including SiO_2 structures on silicon wafers, and various organic polymer films spin-coated on silicon substrates A simple circuit model is introduced to simulate the charging shifts and the peak broadenings. This simple model faithfully reproduces the charging shifts in all cases, and also some of the broadenings for the artificial dielectric layers and the polymer films. Furthermore, these experimental findings can be used for extracting ***material-specific dielectric properties***. Various applications of this technique for characterization of surface structures will be presented and discussed.

Formalités d'entrée *: accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).*

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