Determination of charge neutrality level in TiO2 films from res-PES measurements. — CHITTARANJAN DAS, MASSIMO TALLARIDA, and DIETER SCHMEISSER — Lehrstuhl Angewandte Physik/Sensorik Brandenburgische Technische Universität, Cottbus-Senftenberg Cottbus-03046

Titanium dioxide is one of the metal oxides which have versatile application in different fields. The applications of TiO2 are in the field of cosmetics, electronics (memory resistive switching), dye, photonics and photocatalysis. In the present paper we study the resPES data of TiO2 films prepared by atomic layer deposition. The measurements are done in in-situ system at beam line U49/2-PGM2 in BESSY-II. The density of state in valence band and conduction band is obtained from the resonance photo electron spectroscopy (res-PES) of the O1s and the Ti2p edge. The data allow to determine the position of the VBM and CBM with respect to the Fermi energy. Also the existence of localized O2p and Ti2p derived states is deduced which appear in the gap. In addition we determine the charge neutrality level (CNL). The CNL is the position where the weight of the density of state from valence band and conduction band are equal. This is an important quantity for the discussion of interface properties.

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