i. Optical characterization

Ellipsometry measurements were taken with a M200FI J. A, Woollam Co.™ ellipsometer between 500 nm and 1.69 μm, for angles of incidence ranging from 45° to 75° , which allowed extracting both real and imaginary parts (n and k, respectively) of the TiO_2 optical constants. Taking into account the directional growth of GLAD TiO_2 layers, the elipsometry measurements have been performed at different azimuth angles (see inset figure). However, both TiO_2 layers, grown on glass or on Au/Co/Au trilayer, have not exhibited any dependence of the azimuth angle on the elipsometry measurements. Then a Effective Medium Approximation (EMA) was used for modelling the GLAD TiO_2 layer as a combination of TiO_2 bulk and air. The refractive index and absorption coefficient, obtained from the fit between experiments and model, are shown in the figure. One important parameter is the filling fraction, what is useful to analyze the porosity of our GLAD TiO_2 layer. In this GLAD TiO_2 layer it is obtained a 63% of bulk TiO_2 material inside the layer. The optical constants and porosity of these layers agree with the values of the Ref.[29].

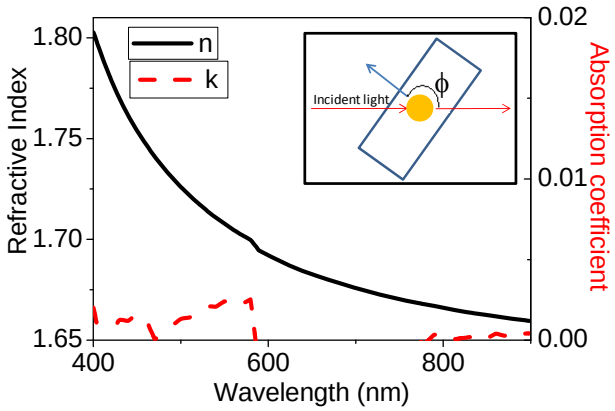

Fig. caption: Optical constants of the TiO_2 layers, grown on glass and on Au/Co/Au trilayer. Inset: A scheme of elipsometric measurements at different azimuth angles (ϕ).