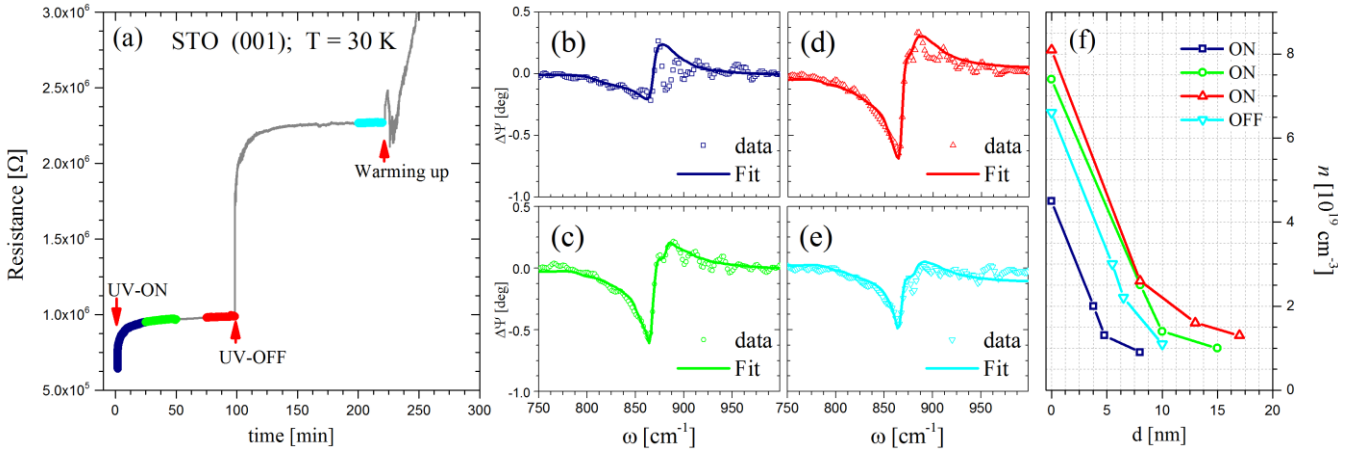

DC resistance and IR ellipsometry study of the photo-induced charge carriers at the surface of a STO (001) single crystal. **(a)** Evolution of the DC resistance during and after the illumination with UV light. Shown in color are the periods during which the ellipsometry spectra in (b)-(e) have been recorded. **(b)-(e)** Difference spectrum of the ellipsometric angle, Ψ, as measured at different times during and after the UV-illumination (at $t > 0$, as indicated in color in Fig. 1(a)) and in the initial, dark state at $t < 0$, i.e. $\Delta\Psi = \Psi(t > 0) - \Psi(t < 0)$. The solid lines show the best fits with the model of a conducting surface layer with a graded depth profile of the charge carriers. **(f)** Depth-profiles of the charge carrier concentration obtained from the best fits in (b)-(e). The other fit parameters are listed in Table I.