INTERACTION OF SURFACE AND LOCALIZED PLASMONS PROBED BY ELLIPSOMETRY

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Interaction of two resonances results in their hybridization and splitting what produces the energy gap between two hybridized dispersion curves instead of their intersection. We investigated the interaction of surface plasmon with localized resonances of nanoparticles deposited on the surface.

Ellipsometry in the Krechman geometry was performed for such structures. Ellipsometry was chosen as the relevant method for the registration of surface plasmon [1] and interparticle interactions [3]. Some results are shown in Figs.1-2.

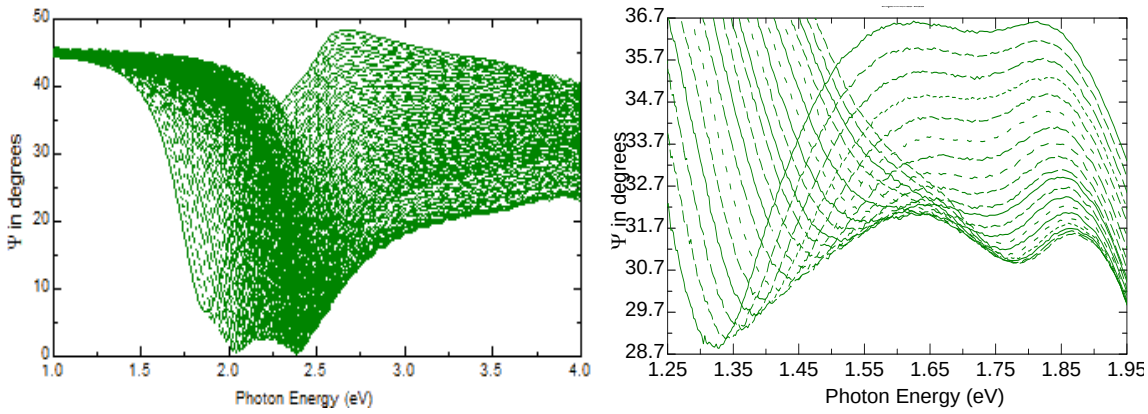

Fig.1. Spectral behaviour of ellipsometric angle Ψ for the system with deposited nanoparticles measured at internal reflection with the excitation of surface plasmon at different angles of incidence.

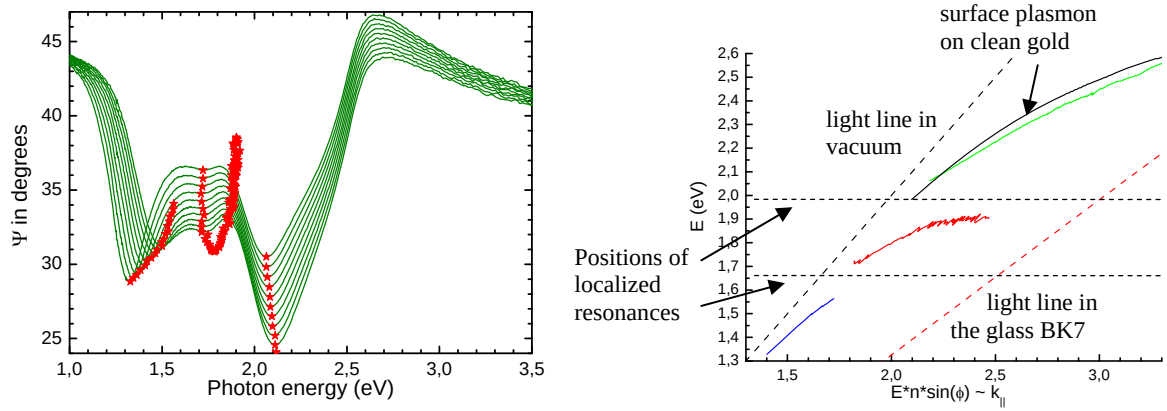

Fig.2. Position of minima of the spectra of Ψ and resulted dispersion curves.

Keywords: ellipsometry, surface plasmon, localized plasmon, splitting

References

[1] E. G. Bortchagovsky, SPIE Proc. **3094** (1997) pp.239-249.
[2] E. G. Bortchagovsky, T. O. Mishakova, and K. Hingerl, Thin Solid Films **571** (2014) pp.625-630.