

Metal micro mesh electrode formation on transparent dielectric surface using Selective Surface Activation Induced by Laser technology

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ITO (Indium Tin Oxide) has been the leading material for TCE (transparent conductive electrodes) for various fields in touch-sensitive sensors. However, it is expensive material, and it uses rare metal indium. Metal micro mesh electrodes have great electrical, mechanical, and optical properties and can be used as an alternative for ITO. Optical transparency and electrical conductivity can be tuned by changing the mesh geometry.

Selective Surface Activation Induced by Laser (SSAIL) technology can be used for metal micro mesh formation on various transparent materials, such as glass or PET [1]. The SSAIL process consists of four steps: laser surface modification and excitation by pulsed laser radiation, chemical activation of the modified sites, rinsing, and electroless chemical deposition of copper in the activated zones. Surface modification depends on various laser parameters, such as pulse duration, energy fluence, pulse overlapping, pulse repetition rate, the size of the focused beam and others.

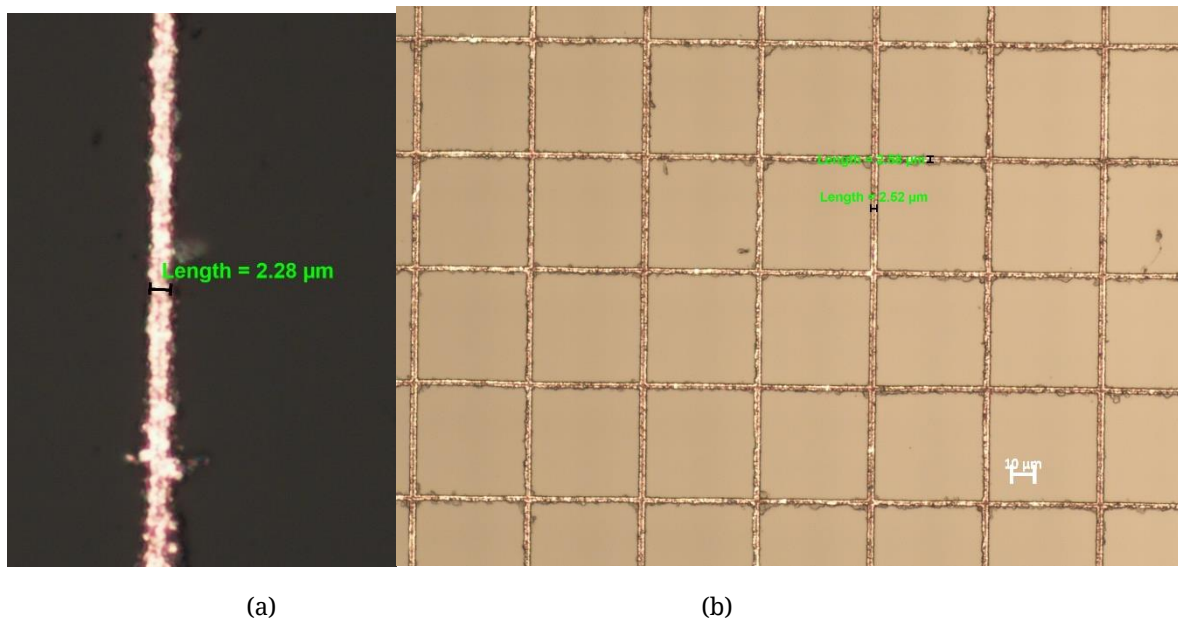


Figure 1 (a) Copper micro traces formed with SSAIL technology on soda lime glass. (b) Metal mesh formed on soda lime glass with SSAIL technology.

References: [1] K. Ratautas, A. Jagminienė, I. Stankevičienė, M. Sadauskas, E. Norkus, and G. Račiukaitis, Evaluation and optimisation of the SSAIL method for laser-assisted selective electroless copper deposition on dielectrics, Results in Physics, vol 16, p. 102943, (2020)