

## Topography and water wettability of Mo films evaporated onto glass by means of self-ion assisted deposition

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Mo thin film back contact layers for solar cells were deposited onto glass substrates using a self-ion assisted deposition method (SIAD). Requirements for the Mo thin films used for CIGS solar cells are various. Sheet resistance, contact resistance to the CIGS absorber, optical reflectance, surface morphology, and adhesion to the glass substrate are the most important properties that the Mo thin film back contact layer must satisfy. Experiments were carried out under various combinations of acceleration voltage and deposition time, for it is known that morphological properties of Mo thin film are dependent on these parameters. The surface morphology and the surface hydrophobicity of the obtained films were characterized. Atomic force microscopy (AFM) study of samples was performed using NT-206 microscope in the contact mode with silicon cantilever tips CSC21. Contact angle measurements were based on the sessile-drop [1].

We observe the initial stages of formation and growth of the Mo films. According to the qualitative description of evolution thin films synthesized on different substrates we observe the following steps: island growth, impingement and coalescence of islands, development of a continuous structure.

The AFM, wettability test results show fundamental difference between the average roughness and the contact angle of initial glass (2.2 nm, 25.1°) and that of experimentally modified surfaces (0.2-2.7 nm, 44-69.7°). It was indicated that with an increase of the deposition time, the roughness average and the contact angle decreases. We have observed that deposition of Mo thin film on glass can be used for receiving surface with desirable topography and water wettability.

### References

[1] I. Tashlykov, A. Turavets, P. Zukowski, *Przegląd Elektrotechniczny*, 2013, 89; n.3b, 285-287.