
MONITORING RESISTANCE OF A THIN-FILM COATING IN REAL TIME

A.P. Fedyunin

fedyunin_42@mail.ru

Bauman Moscow State Technical University, Moscow, Russian Federation

Abstract

One of the priority problems in controlling manufacturing processes of forming thin-film coatings is stopping the process when the electrical resistance of the film reaches a preset value. The study deals with controlling the thickness of a conductive coating by means of its electrical resistance. We suggest an electric measuring system for implementing this control technique, which is aimed at obtaining nanoscale island structures and may be built into the substrate holder of the chamber hardware. We conducted experiments in measuring actual resistance of a thin film during the process of magnetron sputter deposition.

Keywords

Resistance monitoring, electron and ion beam technologies, magnetron sputter deposition, evaporation, thin films, processing station, analog-to-digital convertor, nanoscale island structures

© Bauman Moscow State Technical University, 2017

References

- [1] Sidorova S.V., Yurchenko P.I. Islet nanostructures formation in vacuum. *Nauka i obrazovanie: nauchnoe izdanie* [Science and Education: Scientific Publication], 2011, no. 10. Available at: <http://old.technomag.edu.ru/doc/259672.html>.
- [2] Bulan D.I. Sravnitel'nyy analiz i metody izmereniya tolshchiny opticheskogo pokrytiya v protsesse naneseniya [Comparative analysis and measurement technique for measuring thickness of optical coating in process of its depositing]. *Materialy X Respublikanskoj nauchno-prakticheskoy konferentsii molodykh uchenykh i studentov BNTU* [Proc. X Republic Sci.-Practice Conf. of Young Scientists and Students]. Available at: <https://rep.bntu.by/bitstream/handle/data/10167/%D0%A1.%20103-04.pdf?sequence=1&isAllowed=y> (accessed 30 June 2017).
- [3] Bhushan B., ed. Springer handbook of nanotechnology. Springer, 2010, 1964 p. (Russ. ed.: *Spravochnik Shpringera po nanotekhnologiyam*. V 3 t. T. 1. Moscow, Tekhnosfera publ., 2010, 590 p.).
- [4] Markelov G.E. Regressionnyye modeli [Regression models]. Moscow, Bauman MSTU, 2010. 1 CD-R. FGUP «Informregistr» № 0321000570.

Fedyunin A.P. — student, Department of Electron Beam Technologies in Mechanical Engineering, Bauman Moscow State Technical University, Moscow, Russian Federation.

Scientific advisor — V.T. Ryabov, Cand. Sc. (Eng.), Assoc. Professor, Department of Electron Beam Technologies in Mechanical Engineering, Bauman Moscow State Technical University, Moscow, Russian Federation.
