Title (EN): **Investigation of electrons interaction in resist in the preparation process of nanophotonic structures using direct writing electron beam lithography**

Title (SK)**: Interakcia elektrónov v reziste v procese prípravy nanofotonických štruktúr metódou priamej viacúrovňovej elektrónovej litografie**

Authors: Robert Andok with the co-workers of the Dept. of Electron-Beam Lithography II SAS

Scientific projects: VEGA 2-0134-15, APVV SK-BG-2013-0030, MAD SK-BG 2015-2017

Annotation: The development of nanophotonic circuits requires the preparation of nanophotonic structures with high resolution, productivity, flexibility and very precise regulation of the structure profile in polymer resists. We investigated the characteristics of selected electron resists and limiting factors in the electron lithography process for materials used in nanophotonic circuits. The original results represent the exposure parameters obtained for electron energy 40 keV and the study of resist structure profile dependence from exposure parameters. We gained new knowledge of the interaction of electrons with electron resists on the semiconductor wafers of III/V groups, and of limiting factors in the range of several tens of nanometers.

The results were used in the preparation of nanophotonic structures for research projects.

Main scientometric outputs:

1. HRONEC, P. - PUDIŠ, D. - ŠKRINIAROVÁ, J. - KOVÁČ, Jaroslav - ANDOK, Róbert. Lithographic technologies suitable for PhC patterning and optical properties of patterned LED surfaces. In Optik, 2017, vol. 143, p. 35-41. (0.835 - IF2016). ISSN 0030-4026. Typ: ADCA
2. ŠKRINIAROVÁ, J. - PUDIŠ, D. - ANDOK, Róbert - LETTRICHOVÁ, I. - UHEREK, F. Investigation of the AZ 5214E photoresist by the laser interference, EBDW and NSOM lithographies. In Applied Surface Science, 2017, vol. 395, p. 226-231. (3.387 - IF2016). ISSN 0169-4332. Typ: ADCA
3. ANDOK, Róbert - BENČUROVÁ, Anna - KOSTIČ, Ivan - RITOMSKÝ, Adrian - ŠKRINIAROVÁ, J. - VUTOVA, Katia. Study of negative electron beam nanoresist HSQ on GaAs substrate. In ASDAM 2016 : the 11th International Conference on Advanced Semiconductor Devices and Microsystems. - IEEE, 2016, p. 133-136. ISBN 978-1-5090-3081-1. Typ: ADMB
4. KOSTIČ, Ivan - VUTOVA, Katia - BENČUROVÁ, Anna - RITOMSKÝ, Adrian - ANDOK, Róbert. Limitations of variable shaped electron beam lithography for advanced research and semiconductor applications. In ISSE 2017 : 40th international spring seminar on electronics technology. - Sofia, Bulgaria : IEEE, 2017, p. 226-231. ISBN 978-1-5386-0582-0. ISSN 2161-2536. Typ: ADMB