

Precision polishing the back side of 100 mm wafers Si with optoelectronic photosensitive elements

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The work is devoted to the development of technology for manufacturing photodiodes based on silicon, which remains one of the most widely used materials in the microelectronics industry. A study is presented of a promising method for precision processing of monocrystalline silicon wafers, which helps solve the problem of defect formation when creating a Cr-Au contact layer due to the insufficiently low surface roughness.

Keywords: mechanical polishing, loose abrasive, silicon, photosensitive element, planar, $p-i-n$ photodiode.

REFERENCES

1. Budtolaev A. K., Liberova G. V. and Hijnyak V. I., Applied Physics, № 5, 47 (2018) [in Russian].
2. Budtolaev A. K., Liberova G. V., Rybakov A. V. and Hakuashev P. E. Patent RU 2654998C1, 23.05.2018, № 15.
3. Demidov S. S. and Klimanov E. A. Patent RU 2654992C1, 23.05.2018, № 15.
4. Bolesov I. A. Diss. Issledovaniya i razrabotka tekhnologii izgotovleniya PIN-fotodiodov na osnove kremniya s primeneniem ionnoi implantatsii: kand. tech. nauk. M., 2004.
5. Trofimov A. A., Denisov I. A. and Smirnova N. A., Usp. Prikl. Fiz. (Advances in Applied Physics) **10** (3), 289 (2022) [in Russian].
6. Trofimov A. A., Uchabin O. A., Smirnov A. S., Kurepin S. A. and Denisov I. A., Usp. Prikl. Fiz. (Advances in Applied Physics) **10** (5), 459 (2022) [in Russian].