Investigation of the possibility of using neural networks in determining defects in semiconductor materials in images of scanning electron microscopy

V. A. Malygin[1], K. E. Bajenov[1], V. S. Popov[1,2] and T. A. Zasyadko[1]

[1] Orion R&P Association, JSC
9 Kosinskaya st., Moscow, 111538, Russia

[2] Moscow Institute of Physics and Technology
9 Institutskiy per., Dolgoprudny, Moscow Region, 141701, Russia

The research is devoted to the development of a method for detecting defects in semiconductor manufacturing using neural networks in images obtained using a scanning electron microscope. A study has been conducted on a method that allows to reduce the processing time of the obtained images when searching for defects.

REFERENCES

1. Petrovsky E. V. et al. Scientific community of students of the XXI century. Technical sciences: Sat. art. on mat. LXI International Student Scientific and Practical Conference. Novosibirsk, 2018, № 1(60), p. 245.
2. Ismailov Sh. A. and Pozdnyakov N. V., Monitoring. Science and technology, № 2, 63–72 (2011).
3. Kruglov V. V. and Borisov V. V., Artificial neural networks. Theory and practice, Moscow, Hotline – Telecom, 2002.
4. Goodfellow I., Bengio Y. and Courville A., Deep Learning, Cambridge, MIT Press, 2016.
5. Nikolenko S. I. and Tulupyev A. L. Self-learning systems, Moscow, ICNMO, 2009.
6. Bagaev I. I., Mathematical and software systems in industrial and social spheres **8** (1), 15–22 (2020).