

# Thermal imaging microscope

Bazovkin V.M., Guzev A.A., Kovchavtsev A.P., Kuryshchev G.L.,  
Larshin A.S., Polovinkin V.G.

Institute of Semiconductor Physics, Russian Academy of Science,  
Siberian Branch, Novosibirsk, 630090, Russia

The construction, technical parameters and examples of application thermal imaging microscope are considered. The device designed on the basis of a hybrid microcircuit of matrix photodetector device *InAs*. Dimensionality of a photodetector matrix is  $128 \times 128$ , a step of cells (sensors)  $50 \text{ }\mu\text{m}$ , a working range of lengths of waves  $2.5 \div 3.1 \text{ }\mu\text{m}$ . At use of an IR objective with a relative aperture 1:1.8 and  $10\times$  optical magnification is received the temperature resolution 0.2K and 0.015K for the objects having temperature 300K and 450K, accordingly. The spatial resolution of the device in these conditions has made  $\sim 7 \text{ }\mu\text{m}$  at the diffraction resolution limit  $2.5 - 3.0 \text{ }\mu\text{m}$ . The possibility of improvement of the spatial resolution by means of numerical processing the image is tested

## References

V. M. Bazovkin, A. A. Guzev, A. P. Kovchavtsev, G. L. Kuryshchev, A. S. Larshin, and V. G. Polovinkin, Prikl. Fiz., No. 2, 97 (2005).

V. M. Bazovkin, G. L. Kuryshchev, I. V. Mzhel'skii, and V. G. Polovinkin, Optoelectronics, Instrumentation and Data Processing, **47** (5), 498 (2011).