

NOVEL PHOTOLUMINESCENCE-ENHANCING
SUBSTRATES FOR IMAGE FORMATION
OF BIOLOGICAL OBJECTS

*G.I. Dovbeshko¹, O.M. Fesenko¹, V.V. Boyko¹,
V.F. Gorchev², S.O. Karakhin², N.Ya. Gridina³,
V.S. Gorelik⁴, V.N. Moiseenko⁵*

¹Institute of Physics, Nat. Acad. of Sci. of Ukraine
(46, *Prosp. Nauky, Kyiv 03028, Ukraine*)

²O.V. Paladin Institute of Biochemistry,
Nat. Acad. of Sci. of Ukraine
(9, *Leontovych Str., Kyiv 01601, Ukraine*)

³A.P. Romodanov Institute of Neurosurgery,
Academy of Medical Science of Ukraine
(32, *Manuilskyi Str., Kyiv 04050, Ukraine*)

⁴P.N. Lebedev Physical Institute,
Russian Academy of Sciences
(53, *Lenin Ave., Moscow 117924, Russia*)

⁵Dnipropetrovsk National University
(72, *Gagarin Ave., Dnipropetrovsk 49050, Ukraine*)

S u m m a r y

The use of photonic crystals, which were fabricated on the basis of synthetic opals, as substrates for the luminescence microscopy of biological objects has been shown. The spatial distributions of the photoluminescence by DNA clusters excited by 365-nm ultra-violet irradiation on opal surfaces and rough gold substrates have been studied. With the use of blood cells as an example, a possibility for the visualization of biological objects in the case where the nanostructure elements of synthetic opals are applied as labels and image amplifiers has been demonstrated.