

**The use of the speckle dynamics for the quantitative analysis of micro and macro processes in cultured cells:
Theory and experiment**

A P Vladimirov^{1,2,3}

¹Yekaterinburg Institute of Viral Infections, Russia

²Ural Federal University, Russia

³RAS - Institute of Engineering Science, Ural Branch, Russia

Previously, the theory of dynamic speckle-interferometry allows to study intracellular phenomena were developed by the author. The theory has been successfully used by the author with colleagues to study the effects of herpes virus in three types of cultured cells. The purpose of this report is to familiarize colleagues with the specificities of the theory and application of the method. First briefly discusses the theory of the method, the basic formulae used in practice. It is shown that the time-average intensity at the observation point and the correlation coefficient of the area of images depend on the parameters characterizing macroscopic changes (shape of cells) and microscopic processes in cells. Two experiments at high optical magnifications considered. In the first experiment, the thawed cells were studied. In the experiment, there was a shape change of cells due to their displacement, at the same time intracellular processes took place. In the second experiment, the intracellular phenomena in monolayer of cultured cells were studied. Similarities and differences in the behavior of thawed and cultured cells are discussed.

Biography

A P Vladimirov graduated from the State University in Cheboksary in 1975. In 1986, he defended his candidate dissertation, and in 2002 the Doctoral dissertation. Since 1972, he has been working in the field of development and application of speckle - holographic methods of measurement and control. He worked at the Institute of Polymeric Materials (Perm) and Institute of Metal Physics (Sverdlovsk). Currently, he is working in three organizations: The Institute of Engineering Science of the Ural branch of the Russian Academy of Sciences, Ural Federal University, and Institute of Viral Infections (Yekaterinburg).

vap52@bk.ru

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