

Peculiarities of the Motion of Fluids under the Effect of a DC Magnetic Field and Chemical Dissolution

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The study of the interaction of metal surfaces with electrolytes under the influence of an external magnetic field and the autocatalytic formation of spatiotemporal structures are of great interest in the recent years. The magnetic field in this case is an additional parameter that allows us to modify existing or create new structures by changing or substitution of reaction mechanisms.

The measurements of the dynamic characteristics of the motion of fluids are caused by the need to enter marker particles in the medium under investigation or usage other mechanical methods [1]. The proposed method of obtaining data on the motion of fluids does not require the use of additional inclusions and allows us to avoid the distortions caused by such inclusions.

In our previous paper [2] we proposed the method for local measurement of the frequency characteristics of electrolytes motion. In order to obtain an overall dynamic picture of the behaviour of fluids that interact with metal surfaces under the influence of an external magnetic field we modified the proposed method by changing the geometry of filming and radiation source. The electrolyte solution was illuminated by near-infrared scattered radiation of LED package that allowed increasing the contrast of the resulting image due to higher absorption of radiation by a medium under investigation. The performed investigations have shown that the basic frequencies of the motion of electrolyte coincide with the results obtained earlier [2]. The developed method allows us to obtain the distributions of the characteristic frequencies of the motion over the volume of the medium under investigation.

1. Coey J. M. D., Hinds G., Lyons M. E. G. Magnetic Field Effects on Fractal Electrodeposits // Europhys. Lett.-1999.-**47**, No. 2.-P. 267-272.
2. Derecha D. O., Skirta Yu. B., Gerasimchuk I. V. Electrolyte Vortex Dynamics in the Vicinity of a Ferromagnetic Surface in a Direct Current Magnetic Field // J. Phys. Chem. B.-2014.-**118**, No. 50.-P. 14648-14651.