

NEEDLE-LIKE MAGNETIC CLUSTERS
IN MAGNETIC FLUID AND THEIR
BEHAVIOR IN MAGNETIC FIELD

*O.A. Antonyuk, V.F. Kovalenko, B.M. Moldovan,
M.V. Petrychuk*

Taras Shevchenko Kyiv National University,
Faculty of Radiophysics
(2, Academician Glushkov Prosp., Kyiv 03122, Ukraine)

S u m m a r y

The application of a magnetic field with gradient to a magnetic fluid put into a round capillary allows us to experimentally create the periodic structures of needle-like clusters composed of magnetic particles. The period of such a structure can be varied in some boundaries under the influence of a magnetic field. Needle-like clusters are free to rotate in the external magnetic field by repeating its direction. With increase in the magnetic field, the periodical structure transforms into a hexagonal lattice of clusters. The fact of coincidence of the experimental results with the results of analytic description within the model we suggest to explain the behavior of magnetic clusters in magnetic fields proves the legitimacy of such a model.