ESTIMATE OF THE MAGNETIC FILTERS EFFECTIVENES WITH DENDRITE STRUCTURE

S.V. Gorobets, N.O. Mykhailenko, O.K. Dvoynenko

National Technical University of Ukraine «KPI».
E-mail**:** pitbm@ntu-kpi.kiev.ua

The magnetic nanomaterials got wide using in different fields of science and terchniques in connection with the adoption of achievements of nanotechnologies The nanomaterials are used in biotechnology in the field of production of magnetically operated sorbents for the cleaning of the biological media. With using of these magnetic nanosized particles the magnetic properties are attached to the non-magnetic destination objects, which can be extracted from the working medium by magnetic separator(MS). The high gradient ferromagnetic attachments (HGFA) are often used for the effective catching of the micro- and nanoobjects by MS.

HGFA is the net with dendrite structure or ramified surface, got by the magnetically operated corrosion with the elements sizes of the second layer of a few microns and amaller.

In this work the ferromagnetic bead 1 were chosen as the single element of the attachment (Fig. 1), which sizes were commensurable with characteristic dimensions of the attachment and were 0,05–0,5 mm. The bead were established in the model liquid stream, which consists of magnetically marked yeast *Sacharamyces cerevisiae* cells, got according to the method [1]. The direction of the field were coincided with the direction of liquid movement.

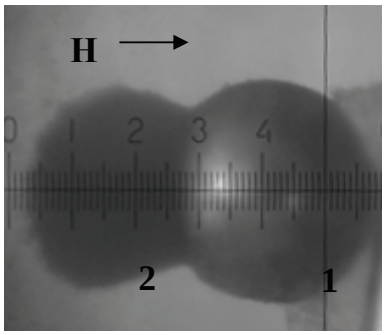

Fig. 1. The precipitation area of the magnetically marked yeast cells on the spherical ferromagnetic attachment in magnetic field with 7 000 E intensity.

The precipitation angle of the magnetically marked cells varied in range 78º-110º. The volume of trapped biosorbent cluster depended on the ratio of the nanomagnet–biosorbent quantity. From performed investigations the ratio yeast cells–nanomagnet was determined for the optimal (the most efficient) work of attachment.

1. S.V. Gorobets, O.Yu. Gorobets, V.V. Lizunov, O.M. Kashpur, O.M. Bylo. Method of determination of magneto-controlled biosorbents magnetic susceptibility// 4th International Conference. Physics of liquid matter: modern problems – 2008.- p.168.