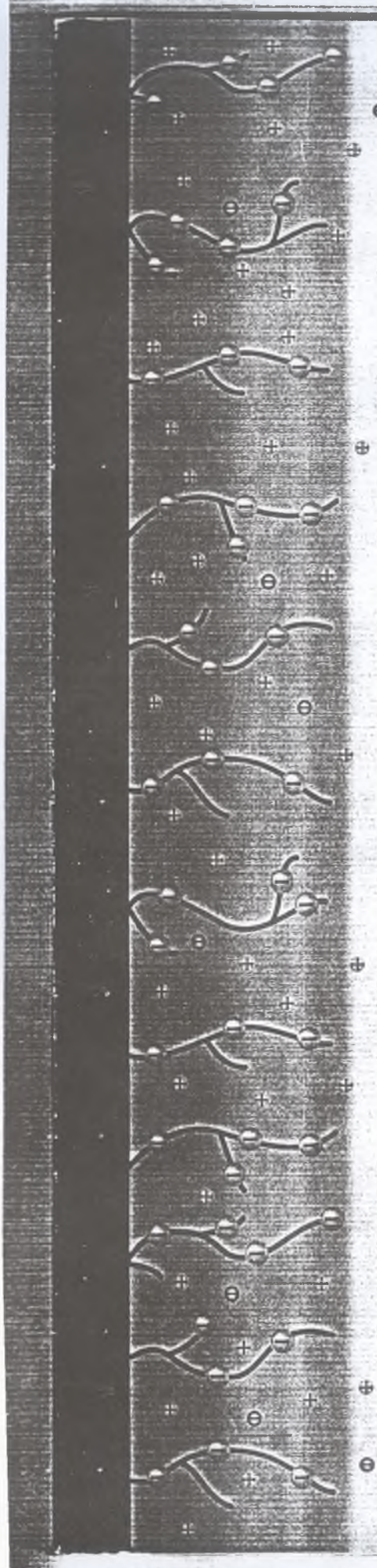

ELKIN2012

The 10th International Symposium on Electrokinetic Phenomena

ABSTRACTS

May 20-24, 2012

University of Tsukuba

Tsukuba, Japan

The 10th International Symposium on
Electrokinetic Phenomena (ELKIN 10th)

ELKIN2012

http://www.envr.tsukuba.ac.jp/~elkin12/

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PROGRAM &
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University Hall

筑波大学
University of Tsukuba

The Electrokinetic Society of Japan

ELKIN2012 日本委員会

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Chairs: Takanori Akagi / Sosaku Ichikawa

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Poster	P22	K.B. Korzhynbayeva, S.M. Tazhibayeva, A.B. Orazymbetova, K.B. Musabekov and A.A. Zhubanova Influence or Surfactants on Electrokinrtic Potential of Yeast Cells

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INFLUENCE OR SURFACTANTS ON ELECTROKINETIC POTENTIAL OF YEAST CELLS

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For reception of some information on the mechanism of surfactants adsorption on a cells surface influence of low-molecular surfactants on electrokinetic potential of a surface of barmy cells is studied. It is established that low-molecular surfactants – sodium oleate and cetylpyridinium bromide – on a miscellaneous influence on ζ - potential of *Torulopsis kefir var kumis* and *Sacharomyces cerevisiae* cells. Cetylpyridinium bromide, like metal ions, causes abnormal increase in a negative charge of a surface to concentration 10^{-5} mole/l. The further increase in concentration of surfactants leads to decrease ζ - potential up to a surface recharge at concentration 10^{-2} mole/l. For comparison we will notice that ions Na^+, K^- aren't capable to a recharge of a surface of other cells.

As to influence sodium oleate on ζ - potential of cells in the field of concentration 10^{-6}-10^{-4} mole/l is observed slight increase ζ - potential of yeast, however at concentration of surfactants 10^{-3} mole/l occurs sharp growth of values ζ - potential. Apparently, hydrocarbonic radicals of sodium oleate are adsorbed on unpolar sites of a surface of cells that leads to some growth of negativity of a surface. At achievement of concentration of surfactants 10^{-2} mole/l, possibly, on a surface processes of association of surfactants with formation of bilayer.

The action mechanism cetylpyridinium bromide on ζ - potential of *Torulopsis kefir var kumis* and *Sacharomyces cerevisiae* cells can be explained a conclusion to a surface of additional quantity of negatively charged groups as it occurs at introduction in their suspension of metal ions /1/. The further decrease in values ζ - potential and a surface recharge can be caused compression of diffusion parts of a double electric layer.

Thus, diphylic nature of a surface of microorganisms cells – a combination on it waterproof and hydrophylic sites – cause the various mechanism of an attachment to it surfactants ions and respective alteration ζ - potential. As the surface of cells is negative, anionic surfactants can be attached to it on unpolar sites at the expense of waterproof interactions. Cationic surfactants, having an opposite charge, are adsorbed on a surface of cells at the expense of electrostatic interactions, however specificity of biological objects causes in reply to their negative influence a conclusion to a surface of additional quantity of anionic functional groups.

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