

ELECTRICAL CONDUCTIVITY OF BIOFILMS *PSEUDOMONAS* ON THE SPHERICAL PROBES

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The constancy of the electrical conductivity of biofilm, in practical terms, allows the construction of a simple control scheme biofouling, and, hence, bio-corrosion, using the correlation between the biofilm thickness and its electrical conductivity.

The aim of research was to determine the adhesion rate of the microbial environment, and due to the advent of biofilm change the conductivity probe biofilm system. Two variants of configurations probes which were formed of copper wire with a diameter of 180 microns were examined. The active element (tip surface to be coated agent that reacts with the analyte) formed as an offset from the axis of the electrode (wire) and strictly axis.

The probe is formed in an argon atmosphere, and its surface was clean metal probe, that was formed in the air, had a surface oxide film. The probes were placed in a culture of bacterial cells and incubated various times periodically measured the size of the probe, i.e., the value of biofilms formed under an optical microscope. The culture of bacterial cells was a consortium of *Pseudomonas* microorganisms (of 3 strains of the museum that is stored at the Department of Microbiology of the II Mechnikov ONU.).

The conductivity probe biofilm system was determined at the facility, which consisted of a pulsed voltage source G5-56 calibrated resistance, dual-channel storage oscilloscope, the capacity with the culture of cells and electrodes, platinum electrode. To eliminate the effect of polarization, and significant adverse initiate chemical reactions measurements were carried out using a single voltage pulse.

Adsorption of microorganisms characterized by a continuous film formation rate of the bacterial cells, as well as conductivity, electron conductivity was biofilm, and the value was ~ 5 mS / cm. Conductive at the same time become huge - centimeter - areas, thousands of times greater than the size of themselves G. sulfur reducers. When adding a third electrode when the measuring circuit begins to resemble a transistor, the electrical conductivity also becomes dependent on the voltage on the control electrode.

In scientific terms, the study may advance the understanding of conduction mechanisms of biofilm.