

MATHEMATICAL MODELING OF AMPEROMETRIC BIOSENSORS ACCORDING TO THE DYNAMICS OF ACTIVE ENZYME REGIONS

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We present a two dimensional in space mathematical model of amperometric biosensors based on nonlinear reaction diffusion equations. Here an amperometric biosensor is considered as a flat electrode deposited with a layer of enzyme and covered with a porous membrane. We modeled biosensors taking into account the dynamics of the active enzyme regions. Using computer simulation the influence of the thickness of the porous membrane on the biosensor response was investigated. The effect of the diffusion layer on the biosensor response was evaluated for different reaction rate constants and diffusion coefficients in enzyme layer. The digital simulation was carried out using the finite difference technique.

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