

# **Plasma oscillations in systems with weakly bounded charges. Macromolecules of biopolymers**

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Within the framework of a simple model the estimation of polarization properties of biological macromolecules on an example of a protein globule is made. Embodying of this model by using of phenomenological description of physical-mechanical properties allows making an estimation of possible value of longitudinal dielectric permittivity of a system of the biomolecules. The possibility of dielectric permittivity value transformation into a zero is an evidence of a possibility of spontaneous long-wavelength breaking of plasma charge neutrality (an occurrence of charge density waves known as plasmons). Corollaries of the presence of plasma waves in the structures are discussed: a concrete definition of diffusion mechanism of ligands, mechanisms of redox reactions and also using the plasma wave presence for the diagnostics at an investigation of the electrodynamic properties of biomolecules in microwave spectral region.