Abstract Submitted
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X-ray Study of the Electrical Double Layer at the Oil - Water Interface[1] ALEKSEY TIKHONOV, CARS-The University of Chicago — Our understanding of the structure of the insulator/electrolyte solution interface is of fundamental importance in describing electrochemical processes in systems involving membranes, absorbers, catalysts, surfactants, or surfaces of other dielectrics. Due to the specific interaction of the solvent with the insulator, a heterogeneous highly polarized region or an electrical double layer forms at the boundary between bulk phases. We studied the spatial structure of the transition region between n-hexane (insulator) and silica sol (electrolyte) solution by x-ray scattering. The structure factor of the interface and the angular dependence of the grazing incidence small-angle scattering can be explained by the interfacial model, which agrees with the theory of the electrical double layer, shows the separation of positive and negative charge, and consists of three layers, i.e., a thin layer of Na^+, a monolayer of nanocolloidal particles as the part of the diffuse layer, and a low-density layer sandwiched between them.

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Aleksey Tikhonov
CARS-The University of Chicago

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