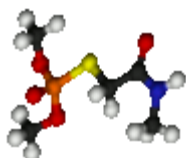




UTP University of Science and Technology

Bydgoszcz - POLAND



Physicochemical Modeling Research Team

General research interests:

The subject of the research carried out by Team is the theory of the formation of a model (bio) material – a vivid problem, occurring at the intersection of three disciplines: physics, chemistry and biology, and other complex materials, emerging in contemporary material science. This implies an active attempt of members of the Team to participate in solving problems concerning the systems at different temporal and spatial scales, and taking into account the various intra- and intermolecular interactions, and taking into consideration the problem of the (multi)structurality in single and multicomponent systems (eg, type of polymer-solvent).

Specific research interests:

- Modeling of viscoelastic systems in meso- and nano-scale.
- Modeling of facilitated lubrication (extremely low coefficient of friction) of articular cartilage.
- Aggregation/crystallization of the synovial fluid components as a source of the pathological changes within the articular capsule, and related biosystems.
- Modeling of aggregations/crystallization of biopolymers (in particular, proteins) in various physico-chemical conditions.
- Modeling of transport phenomena (mass, charge, information, etc.) in micro and macro scale, both in real and virtual system/world.

Selected publications:

- A. Gadomski, P. Beldowski, J. M. Rubi, W. Urbaniak, W. K. Augé II, I. Santamaria-Holek, Z. Pawlak, "Some conceptual thoughts toward nanoscale oriented friction in a model of articular cartilage", *Math. Biosci.* 244 (2013) 188-200.
- P. Bełdowski, R.G. Winkler, J. Hładyszowski, S. Jung, A. Gadomski, "Shape Change of Micelles Dragged with Constant Velocity as Addressed in Terms of Biolubrication Application", *Acta Physica Polonica A*, 129 (2016) 188-189.
- J. Siódmiak, A. Gadomski, "Growing lysozyme crystals under variety of physicochemical conditions - a computer modelling", *J. Noncryst. Solids* 354/35-39 (2008) 4221-4226.

- N. Kruszewska, A. Danch, W. Zielińska-Danch, E. Wieczorek, W. Sułkowski, A. Gadomski, "*Supramolecular structure formation of PMP membranes: Theoretical argumentation in terms of the experimental evidences*", Materials Science and Engineering B 163 (2009) 105–113.
- A. Gadomski, N. Kruszewska, "*Thermodiffusion as a close-to-interface effect that matters in non-isothermal (dis)orderly protein aggregations*", Physics Letters A 378 (2014) 2881-2887.

Members of the Team:

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