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2024

Phase transitions of fluorotelomer alcohols at the water|alkane interface studied via molecular dynamics simulation.

Burrows SA, Shon JW, Peychev B, Slavchov RI and Smoukov SK. *Soft Matter.Royal Society of Chemistry (Rsc)*.

2023

Theory of adsorption of ethoxylates at the water | oil and water | air interfaces. 1. Monolayers of singlecomponent and Poisson distributed alkylphenol ethoxylates.

Slavchov RI. *Journal of Colloid and Interface Science.Elsevier*.

Effect of the solvent quadrupolarizability on the strength of the hydrogen bond: Theory vs data for the Gibbs energy and enthalpy of homo- and heteroassociation between carboxylic acids and water.

Farren LJ, Sharifi N, Clarke SM and Slavchov RI. *The Journal of Chemical Physics vol. 158, (21).American Institute of Physics*.

Measuring the Adsorption of Electrolytes on Lipid Monolayers.

Peychev B, Arabadzhieva D, Minkov I, Mileva E, Smoukov SK and Slavchov RI. *Journal of Physical Chemistry Letters 4652-4656.American Chemical Society*.

Can diesel internal injector deposits form via an electrokinetic mechanism?.

Slavchov RI, Radev I, Philippi W, Peinecke V, Clarke SM and Filip S. *Fuel vol. 338,.Elsevier*.

Interactions between Small Inorganic Ions and Uncharged Monolayers on the Water/Air Interface.

Peychev B and Slavchov RI. *Journal of Physical Chemistry B (Soft Condensed Matter and Biophysical Chemistry). American Chemical Society*.

2022

Minimum surfactant concentration required for inducing self-shaping of oil droplets and competitive adsorption effects.

Feng J, Valkova Z, Lin EE, Nourafkan E, Wang T, Tcholakova S, Slavchov R and Smoukov SK. *Soft Matter vol. 18, (35) 6729-6738.Royal Society of Chemistry*.

2021

Characterization of capillary waves: a review and a new optical method.

Slavchov R, Peychev B and Ismail A. *Physics of Fluids vol. 33, (10).Aip Publishing*.

The cause of accelerated desorption of sparingly soluble dodecanol monolayers: Convection or leakage?.

Minkov IL, Dimitrova IM, Arabadzhieva D, Mileva E and Slavchov RI. *Colloids and Surfaces a: Physicochemical and Engineering Aspects vol. 629,.Elsevier*.

Adsorption model and phase transitions of diblock perfluoroalkylated surfactants at the wateralkane interface.

Peychev B and Slavchov RI. *Journal of Colloid and Interface Science*.

2020

Quadrupolarizability of Liquid Mixtures.

Dimitrova IM, Yordanova VI and Slavchov RI. *The Journal of Physical Chemistry B: Biophysical Chemistry, Biomaterials, Liquids, and Soft Matter*. American Chemical Society.

The role of NO₂ and NO in the mechanism of hydrocarbon degradation leading to carbonaceous deposits in engines.

Slavchov RI, Salamanca M, Russo D, Salama I, Mosbach S, Clarke SM, Kraft M, Lapkin AA and Filip SV. *Fuel* vol. 267, Elsevier.

Nanotechnology in Medicine.

Nikolova M, Slavchov R and Nikolova G. *Drug Discovery and Evaluation: Methods in Clinical Pharmacology* 533-546. Springer Nature.

2019

From the molecular quadrupole moment of oxygen to the macroscopic quadrupolarizability of its liquid phase.

Slavchov RI, Dimitrova IM and Menon A. *Journal of Chemical Physics* vol. 151, (6). Aip Publishing Llc.

Improved methodology for performing the inverse Abel transform of flame images for color ratio pyrometry.

Dreyer JAH, Slavchov RI, Rees EJ, Akroyd J, Salamanca M, Mosbach S and Kraft M. *Applied Optics* vol. 58, (10) 2662-2670. Optical Society of America.

Barrier kinetics of adsorption-desorption of alcohol monolayers on water under constant surface tension.

Minkov IL, Arabadzhieva D, Salama IE, Mileva E and Slavchov RI. *Soft Matter* vol. 15, (8) 1730-1746.

Correction: Barrier kinetics of adsorption-desorption of alcohol monolayers on water under constant surface tension (Soft Matter (2019), DOI: 10.1039/c8sm02076k).

Minkov IL, Arabadzhieva D, Salama IE, Mileva E and Slavchov RI. *Soft Matter* vol. 15, (8) 1890-1890.

2018

Flexoelectricity and the Formation of Carbon Nanoparticles in Flames.

Martin JW, Botero M, Slavchov RI, Bowal K, Akroyd J, Mosbach S and Kraft M. *The Journal of Physical Chemistry C* vol. 122, (38) 22210-22215. American Chemical Society (Acs).

Effective osmotic cohesion due to the solvent molecules in a delocalized adsorbed monolayer.

Slavchov RI and Ivanov IB. *J Colloid Interface Sci* vol. 532, 746-757.

An adsorption-precipitation model for the formation of injector external deposits in internal combustion engines.

Slavchov RI, Mosbach S, Kraft M, Pearson R and Filip SV. *Applied Energy* vol. 228, 1423-1438.

Polar curved polycyclic aromatic hydrocarbons in soot formation.

Martin JW, Bowal K, Menon A, Slavchov RI, Akroyd J, Mosbach S and Kraft M. *Proceedings of The Combustion Institute* vol. 37, (1) 1117-1123.

Vapor Pressure and Heat of Vaporization of Molecules That Associate in the Gas Phase.

Slavchov RI, Novev JK, Mosbach S and Kraft M. *Industrial & Engineering Chemistry Research* vol. 57, (16) 5722-5731. American Chemical Society (Acs).

2017

The Polarization of Polycyclic Aromatic Hydrocarbons Curved by Pentagon Incorporation: The Role of the Flexoelectric Dipole.

Martin JW, Slavchov RI, Yapp EKY, Akroyd J, Mosbach S and Kraft M. *The Journal of Physical Chemistry C* vol. 121, (48) 27154-27163. American Chemical Society (Acs).

Contribution of the surface dipole moment and the contact potential-induced disjoining pressure to the stress balance at a three-phase contact.

Slavchov RI, Dimitrova IM and Radoev BP. *Colloid Journal* vol. 79, (6) 815-821. Pleiades Publishing.

Evaporating foam films of pure liquid stabilized via the thermal Marangoni effect.
Novev JK, Panchev N and Slavchov RI. *Chemical Engineering Science* vol. 171, 520-533.

Comment on A spherical cavity model for quadrupolar dielectrics [J. Chem. Phys. 144, 114502 (2016)].
Dimitrova IM, Slavchov RI, Ivanov T and Mosbach S. *The Journal of Chemical Physics* vol. 146, (18).Aip Publishing.

Adsorption parameters and phase behaviour of non-ionic surfactants at liquid interfaces.
Slavchov RI and Ivanov IB. *Soft Matter* vol. 13, (46) 8829-8848.Royal Society of Chemistry (Rsc).

2016

Energy of Liposome Patch Adhesion to the Pipet Glass Determined by Confocal Fluorescence Microscopy.
Nakayama Y, Slavchov RI, Bavi N and Martinac B. *Journal of Physical Chemistry Letters* vol. 7, (22) 4530-4534.

Adsorption of Ions at Uncharged Insoluble Monolayers.
Peshkova TV, Minkov IL, Tsekov R and Slavchov RI. *Langmuir* vol. 32, (35) 8858-8871.American Chemical Society (Acs).

A spherical cavity model for quadrupolar dielectrics.
Dimitrova IM, Slavchov RI, Ivanov T and Mosbach S. *The Journal of Chemical Physics* vol. 144, (11).Aip Publishing.

2015

The polarized interface between quadrupolar insulators: Maxwell stress tensor, surface tension, and potential.
Slavchov RI, Dimitrova IM and Ivanov T. *The Journal of Chemical Physics* vol. 143, (15).Aip Publishing.

2014

Gigaseal Mechanics: Creep of the Gigaseal under the Action of Pressure, Adhesion, and Voltage.
Slavchov RI, Nomura T, Martinac B, Sokabe M and Sachs F. *The Journal of Physical Chemistry B* vol. 118, (44) 12660-12672.American Chemical Society (Acs).

Markov chain model for the critical micelle concentration of surfactant mixtures.
Slavchov RI and Georgiev GS. *Colloid and Polymer Science* vol. 292, (11) 2927-2937.Springer Nature.

Adsorption of ions at the interface oil|aqueous electrolyte and at interfaces with adsorbed alcohol.
Slavchov RI and Peshkova TV. *Journal of Colloid and Interface Science* vol. 428, 257-266.Elsevier.

Quadrupole terms in the Maxwell equations: Debye-Hückel theory in quadrupolarizable solvent and self-salting-out of electrolytes.
Slavchov RI. *The Journal of Chemical Physics* vol. 140, (16).Aip Publishing.

Quadrupole terms in the Maxwell equations: Born energy, partial molar volume, and entropy of ions.
Slavchov RI and Ivanov TI. *The Journal of Chemical Physics* vol. 140, (7).Aip Publishing.

Fully atomistic molecularmechanical model of liquid alkane oils: Computational validation.
Zahariev TK, Slavchov RI, Tadjer AV and Ivanova AN. *Journal of Computational Chemistry* vol. 35, (10) 776-788. Wiley.

Gigaseal Mechanics: Creep of the Gigaseal under the Action of Pressure, Adhesion, and Voltage.
Slavchov RI, Nomura T, Martinac B, Sokabe M and Sachs F. *Journal of Physical Chemistry B* vol. 118, (44) 12660-12672.

2013

Comment on Surface tension of concentrated electrolyte solutions (R.I. Slavchov, J.K. Novev, J. Colloid Interface Sci. 387 (2012) 234).
Slavchov RI and Novev JK. *Journal of Colloid and Interface Science* vol. 423, 168-169.Elsevier.

Surface tension and surface -potential of concentrated $Z^{+}:Z^{-}$ electrolyte solutions.
Slavchov RI, Novev JK, Peshkova TV and Grozev NA. *Journal of Colloid and Interface Science* vol. 403, 113-126. Elsevier.

Cohesive and non-cohesive adsorption of surfactants at liquid interfaces.

Slavchov RI, Dimitrova IM and Ivanov IB. *Understanding Complex Systems* 199-225.

Cohesive and Non-cohesive Adsorption of Surfactants at Liquid Interfaces.

Slavchov RI, Dimitrova IM and Ivanov IB. *Without Bounds: a Scientific Canvas of Nonlinearity and Complex Dynamics* 199-225. *Springer Nature*.

2012

Surface tension of concentrated electrolyte solutions.

Slavchov RI and Novev JK. *Journal of Colloid and Interface Science* vol. 387, (1) 234-243. *Elsevier*.

2011

Hofmeister effect on micellization, thin films and emulsion stability.

Ivanov IB, Slavchov RI, Basheva ES, Sidzhakova D and Karakashev SI. *Advances in Colloid and Interface Science* vol. 168, (1-2) 93-104. *Elsevier*.

2010

Comparative validation of the analytical models for the Marangoni effect on foam film drainage.

Karakashev SI, Ivanova DS, Angarska ZK, Manev ED, Tsekov R, Radoev B, Slavchov R and Nguyen AV. *Colloids and Surfaces a Physicochemical and Engineering Aspects* vol. 365, (1-3) 122-136. *Elsevier*.

Quantum hydrodynamics of electron gases.

Slavchov R and Tsekov R. *The Journal of Chemical Physics* vol. 132, (8). *Aip Publishing*.

Justification of biexponential rate law of spreading over heterogeneous and rough surfaces.

Slavchov R, Dutschk V, Heinrich G and Radoev B. *Colloids and Surfaces a Physicochemical and Engineering Aspects* vol. 354, (1-3) 252-260. *Elsevier*.

2009

Streaming Potential Effect on the Drainage of Thin Liquid Films Stabilized by Ionic Surfactants.

Tsekov R, Ivanova DS, Slavchov R, Radoev B, Manev ED, Nguyen AV and Karakashev SI. *Langmuir* vol. 26, (7) 4703-4708. *American Chemical Society (Acs)*.

2006

Effect of the surface polarizability on electrostatic screening in semiconductors.

Slavchov R, Ivanov T and Radoev B. *Journal of Physics Condensed Matter* vol. 18, (26). *Iop Publishing*.

2005

On the nature of Athabasca Oil Sands.

Czarnecki J, Radoev B, Schramm LL and Slavchev R. *Advances in Colloid and Interface Science* vol. 114, 53-60. *Elsevier*.