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Forskning

Statistical Thermodynamical research, including development of theoretical methods and tools, such as classical Density Functional Theory, many-body interactions, and simulation methods. These tools are utilized for studies on (for instance) ionic liquids, colloidal dispersions, polymer mediated interactions, electric double layer capacitors, capillary/surface driven phase transitions, and dynamical phases.

Anställning

Avdelningsföreståndare, Professor

Beräkningskemi
Lunds universitet
Lund, Sverige
2015 sep. 21 → present

Medlem i Strategiskt forskningsområde

eSSENCE: The e-Science Collaboration
Lunds universitet
Lund, Sverige
2026 feb. 2 → present

Forskningsoutput

Solvent-induced ion clusters generate long-ranged double-layer forces at high ionic strengths

Ribar, D., Woodward, C. E. & Forsman, J., 2025 juni 13, I: Soft Matter. 21, 27, s. 5562-5572 11 s.

Exceptionally Strong Double-Layer Barriers Generated by Polyampholyte Salt

Ribar, D., Woodward, C. E. & Forsman, J., 2025 apr. 3, I: Journal of Physical Chemistry B. 129, 17, s. 4241-4248 8 s.

On the existence of prewetting in supercritical fluid mixtures

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Strong electrostatic attraction drives milk heteroprotein complex coacervation

Vinterbladh, I., Soussi, R. H., Forsman, J., Bouhallab, S. & Lund, M., 2025 jan., I: International Journal of Biological Macromolecules. 286, 137790.

Cluster Formation Induced by Local Dielectric Saturation in Restricted Primitive Model Electrolytes

Ribar, D., Woodward, C. E., Nordholm, S. & Forsman, J., 2024 aug. 15, I: The Journal of Physical Chemistry Letters. 15, 32, s. 8326-8333 8 s.

An efficient method to establish electrostatic screening lengths of restricted primitive model electrolytes

Forsman, J., Ribar, D. & Woodward, C. E., 2024, I: Physical Chemistry Chemical Physics. 26, 29, s. 19921-19933 13 s.

Particle Adsorption Using a Quartz Crystal Microbalance with Dissipation by Applying a Kelvin-Voigt-Based Viscoelastic Model and the Gauss-Newton Method

Furikado, I., Forsman, J. & Nylander, T., 2023 okt., I: Analytical Chemistry. 95, 41, s. 15286-15292 7 s.

Phase transitions of ionic fluids in nanoporous electrodes

Emrani, A., Woodward, C. E. & Forsman, J., 2023 okt., I: European Physical Journal E. 46, 10, 91.

Simulations of phase transitions and capacitance, of simple ionic fluids in porous electrodes

Stenberg, S., Vo, P., Woodward, C. E. & Forsman, J., 2023, I: Electrochimica Acta. 437, 6 s., 141440.

Boundary-Monte Carlo Method for Neutral and Charged Confined Fluids

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Interactions between conducting surfaces in salt solutions

Stenberg, S., Woodward, C. E. & Forsman, J., 2022 feb. 28, I: Soft Matter. 18, 8, s. 1636-1643 8 s.

Overcharging and Free Energy Barriers for Equally Charged Surfaces Immersed in Salt Solutions

Stenberg, S. & Forsman, J., 2021 dec. 14, I: Langmuir. 37, 49, s. 14360-14368 9 s.

Phase Transitions of Oppositely Charged Colloidal Particles Driven by Alternating Current Electric Field

Li, B., Wang, Y. L., Shi, G., Gao, Y., Shi, X., Woodward, C. E. & Forsman, J., 2021 feb., I: ACS Nano. 15, 2, s. 2363-2373 11 s.

Building polymer-like clusters from colloidal particles with isotropic interactions, in aqueous solution

Haddadi, S., Skepö, M., Jannasch, P., Manner, S. & Forsman, J., 2021, I: Journal of Colloid and Interface Science. 581, s. 669-681 13 s.

Confinement-induced fluid-fluid phase transitions in simple fluid mixtures, under bulk supra-critical conditions

Haddadi, S., Woodward, C. E. & Forsman, J., 2021, I: Fluid Phase Equilibria. 540, 112983.

From Attraction to Repulsion to Attraction: Non-Monotonic Temperature Dependence of Polymer-Mediated Interactions in Colloidal Dispersions

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Polymer-Like Self-Assembled Structures from Particles with Isotropic Interactions: Dependence upon the Range of the Attraction

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Nanoplatelet interactions in the presence of multivalent ions: The effect of overcharging and stability

Jansson, M., Belić, D., Forsman, J. & Skepö, M., 2020, I: Journal of Colloid and Interface Science. 579, s. 573-581 9 s.

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Many-body depletion forces of colloids in a polydisperse polymer dispersant in the long-chain limit

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Ma, K., Forsman, J. & Woodward, C. E., 2017 dec. 18, I: Physical Review E. 96, 6, 062609.

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A Many-Body Hamiltonian for Nanoparticles Immersed in a Polymer Solution

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Forskningsmedel

Molecular mechanisms leading to "anomalous underscreening"
Forsman, J. (PI)
Carl Tryggers Stiftelse för Vetenskaplig Forskning: 792 150,00 kr
2026/01/01 → 2028/12/31