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in kemijsko tehnologijo

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VABILO NA PREDAVANJE
V OKVIRU DOKTORSKEGA ŠTUDIJA
KEMIJSKE ZNANOSTI

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z naslovom:

From solutions to molecular emulsions

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Vljudno vabljeni!

Povzetek

Concentration fluctuations play an important role in the statistical description of liquids, particularly in the neighbourhood of phase transitions. Classical Thermodynamics is blind to fluctuations, and it is Statistical Thermodynamics that gives the relevant meaning to quantities such as the isothermal compressibility, by linking them to fluctuations and showing that they are response functions. This is illustrated by the seminal Kirkwood-Buff theory of solutions. However, the existence of micro-heterogeneous structures, particularly in aqueous mixtures, poses the problem of whether the statistical thermodynamics approach is sufficient to describe these systems. The problem comes from the fact that such mixtures exhibit large Kirkwood-Buff integrals, suggesting that micro-heterogeneity is a form of concentration fluctuation. This interpretation becomes difficult to accept when extrapolated to micellar aggregates and micro-emulsions. We introduce a new approach, which allows the description of emergent “objects”, such as the microheterogeneous structures from a molecular point of view, introducing k-dependent fluctuations through scattering pre-peaks. The concept of “molecular emulsion” allows to describe in a unified way all type of disordered liquids, from solutions to the organized liquids of soft matter.