

Nanometer-size superchaotropic ions or a new class of solubilizers

Tuesday, 3 June 2025 19:00 (30 minutes)

Superchaotropic nano-ions have recently captivated attention for their remarkable ability to adsorb onto hydrated neutral surfaces or bind strongly to some cavities of macrocyclic molecules. They indeed exhibit a range of fascinating behaviors:

1. Dramatically increasing the cloud point of non-ionic surfactant systems.
2. Triggering conformational changes in thermo-sensitive polymers in aqueous solutions.
3. Solubilizing weakly hydrophilic compounds in water.
4. Acting as molecular “glue” to link proteins.
5. Inducing phase transitions in lyotropic systems.

Nano-ions bridge the gap between surfactants, hydrotropes, and colloids, with their effects governed by charge density rather than specific chemical composition. Their chemistry, whether polyoxometalates or boron clusters, unlocks a spectrum of exciting possibilities for applications yet to be explored. These versatile compounds are poised to redefine boundaries in materials science, biochemistry, and beyond.

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