Special Issue

Unraveling Water–Nanomaterial Interactions

Message from the Guest Editors

At nanoscale solid–liquid interfaces, water adopts structures and dynamics that differ fundamentally from the bulk, with far-reaching consequences for stability, reactivity, and transport. The interactions between water and nanomaterials affect the function and environmental fate of nanomaterials across applications in nanomedicine, catalysis, biosensing, environmental remediation, and energy storage. Therefore, understanding the entropic contributions to these interfacial phenomena is essential. This Special Issue of *Entropy* invites original research, comprehensive reviews, and short communications that elucidate entropic and energetic principles at water–nanomaterial interfaces, in and out of equilibrium. Topics may include hydration thermodynamics and kinetics, confined-water dynamics, protein–nanoparticle and membrane interfaces, catalytic and electrochemical interphases, and entropy-guided design for drug delivery, biosensing, and environmental remediation. Interdisciplinary studies integrating experiments, theory, and computation are especially encouraged.

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