

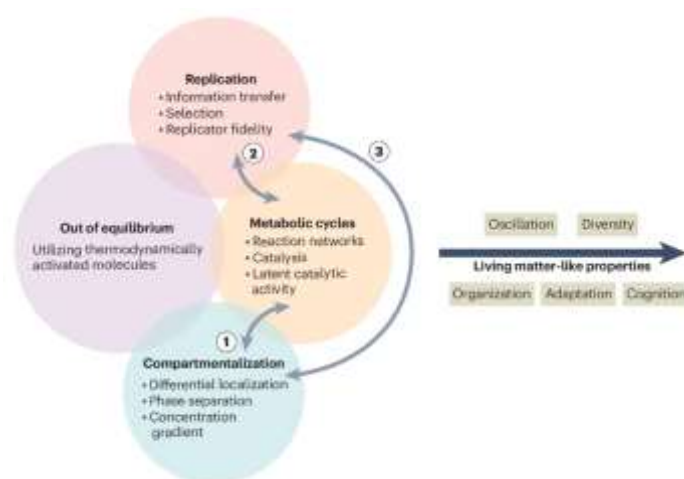
Non-equilibrium self-assembly for living matter-like properties

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Abstract

Life's soft and wet machinery arose from spatially confined assemblies of biomolecules capable of replication, integrated with metabolic reaction cycles that function far from equilibrium.[1] By methodically synthesizing and integrating these key elements, i.e. replication, metabolism, and confinement under non-equilibrium conditions, we can begin to explore how chemically constructed systems might acquire life-like, evolving properties.[2-5] This ambitious goal lies at the heart of systems chemistry. In this talk, I will outline recent insights into how reaction networks, self-reproduction, and compartmentalization can be brought together under non-equilibrium settings.[1] I will also delve into the interplay between reaction dynamics and transient compartmentalization, and explore the development of self-replicating systems capable of sustained operation in far-from-equilibrium conditions.[1]



References

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