Feedback Driven Non-Equilibrium Synthetic Systems

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ABSTRACT

There remain critical gaps in our understanding of the emergence of functional biopolymers in the origins of Earth's biosphere. Extant proteins, evolved over millions of years, carry out an impressive array of responsibilities, from catalysis and molecular recognition to motility and compartmentalization. One of the major goals of our lab is to investigate the possible origins of advanced enzymatic functions from folds of short peptide based paracrystalline phases.[1-2] Further, we are excited about understanding the non-equilibrium structures of living systems. I will show our recent discoveries of simple chemical systems that can be substrate-driven to access higher energy self-assembled states, just as seen in natural microtubules. Further, I will attempt to sketch our aims of developing self-assembled autonomous materials that can show temporal control of functions.[3-7]

Keywords: short peptide; non-equilibrium; self-assembly; autonomous materials; microtubules.

References

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