

The Entropy Change in Open Thermodynamic Systems Far from Equilibrium in Self-Assembly Processes

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The dogmatic claim that cells as real life open thermodynamic systems decrease their entropy is almost 100 years old. The textbook literature and articles in the field of biochemistry, physical chemistry, and life sciences describes the changes of entropy of open thermodynamic systems (i.e. cells) in self organizing processes as negative. However, it was found experimentally that entropy of organisms actually increases over time. Our analysis of behavior of both, closed and open thermodynamic systems was made through modeling. It showed how entropy of open thermodynamic systems far from equilibrium in self organizing processes changes during growth (with addition of monomers). The analysis is extended to real life versions of open thermodynamic systems.