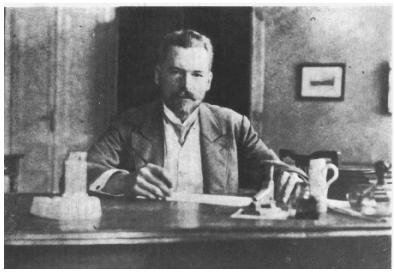

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Non-equilibrium thermodynamics and coarse-grained models of polymers.

Polymers are a group of molecules that presents various physicochemical properties. Some of these properties result from specific chemical groups in the polymer. Another properties are universal, they result from the fact of the chain structure of the molecule. To describe these universal properties of polymers, there are coarse-grained models, which represents this molecule as a chain. Such representation allows study these universal dynamic properties of polymer in a large scale.

Dynamics of polymer chain is due to thermal energy, which is a reason a transitions between polymer's conformational states. Polymers often operate under non-equilibrium conditions (for example in a living systems), therefore dynamics of transitions has to fulfil laws of nonequilibrium thermodynamics. Using this theory kinetic equation of polymer chain in conformational space can be obtained. According some assumptions fractional equation can appear.

In the framework of non-equilibrium thermodynamics, polymers can be seen as a free enthalpy and free energy transducers, where the entropy production takes place. In this approach I will present a generalization of entropy production to the entropy production in a subdiffusive environment.

Summary

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