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## Lecture 2: Physics of macromolecular systems

*Tuesday, 4 July 2023 16:00 (1h 30m)*

Basic physics of polymers. Statistical properties of linear polymer chains, their conformation in space and its dependence on solvent properties and concentration. Each time, we will try to connect the relevant information to the one obtained by small-angle scattering experiments, like the radius of gyration, chain statistics, etc. Polymer solutions are not the only way to suspend chains, they can also be embedded in other matrices, forming polymer blends, the basic thermodynamics of which will be reviewed. When going into polymer materials, crosslinking is the fundamental chemical reaction, while physical bonds may also contribute, and the formation of gels and networks, as well as their thermal and mechanical properties, shall be discussed. If time is available, a short outlook on copolymers will be proposed.

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