

Single Molecule Analysis

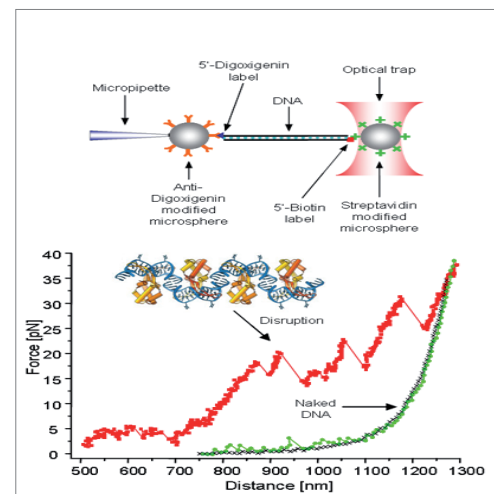
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Optical tweezers are experimental tools with extraordinary precision in determining the relative position (± 1 nm) of a microscopic object (size: $\sim \mu\text{m}$) and in the measurement of the forces acting on it (± 0.1 pN). This enables one to carry out experiments with single molecules, e. g. measurement of the elastic properties of single DNA chains, monitoring the action of histone-like proteins (e. g. HU-proteins from *Thermotoga maritima* and *E.coli*) at a single molecule level and interaction studies of single receptor/ligand-complexes. Furthermore microrheological experiments can be carried out using

single colloids in rest or in flow. Broadband Dielectric Spectroscopy (BDS) but also time-resolved FTIR-spectroscopy and Atomic force microscopy (AFM) are well established and suitable tools to study structure, mobility and relaxational dynamics in (bio)molecular systems, such as proteins, polymers, elastomers and soft composites.

Keywords

- Optical Tweezers
- Single Molecule Analysis
- Molecular Interactions



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