



# Magnetic Tweezers: From Single Enzyme Dynamics to Mechanics of DNA Origami

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## Abstract:

Magnetic tweezers are a sensitive mechanical tool that allows to apply tension and torsion to single biological molecules. It uses a strong magnetic field gradient to generate force onto a magnetic particle that is anchored at the molecule of interest. We have constructed a magnetic tweezers apparatus in which high-speed 3D tracking of the particle position at kHz rates allows to resolve nm-sized conformational changes of a molecule subjected to force. Furthermore, we implemented direct torque measurements and combined magnetic tweezers with single-molecule TIRF microscopy. We will show how this instrument can be applied to study protein diffusion on DNA and to gain insight into the mechanics of DNA nanostructures assembled by the origami method.

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**Room PH 127**

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