

Nanometer-sized diamonds for drug delivery and magneto-optical imaging

Initiative: Integration molekularer Komponenten in funktionale makroskopische Systeme (beendet, nur noch

Fortsetzungsanträge)

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Color centers in diamond nanocrystals are a new class of fluorescent and spin markers that attract significant interest due to biochemical inertness, matchless photostability and biocompatibility. It was demonstrated recently by the applicants that fluorescing diamond nanocrystals containing defects can be used as markers for novel magneto-optical imaging with nanometer resolution. The main idea behind this project is to use the excellent spin properties of diamond defects for understanding the functional dynamics of proteins with sub-nanometer resolution. This technique will be applied to unravel the details of rotary motion and the elastic energy storage mechanism of a single biological nanomotor FoF1-ATP synthase. In addition, surface-modified nanodiamonds will be investigated as drug-delivering nanoparticles in living cells, and successful delivery is observed simultaneously with tracking and ultrahigh-resolution localization of the single markers on long time scales.

Projektbeteiligte

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