Abstract Submitted
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Fluorescence anisotropy imaging of quantum dots and biological molecules[1] ANTHONY BUCCI, YAO LAN, YANA RESHETNYAK, OLEG ANDREEV, URI — We constructed an optical system and developed the software to create and analyze the fluorescence anisotropy images of a variety of objects including single molecules, quantum dots, proteins, nucleic acids and cells. The system includes an inverted microscope, three calcite prisms (CPs) inserted in the excitation and emission optical paths, and CCD camera. The system allows to record dynamic changes in fluorescence anisotropy images with a millisecond resolution. The interactive program in MatLab has been developed to construct and analyze the fluorescence anisotropy images. Using this technique we analyzed fluorescent properties of thousands of single QDs attached to a glass surface or to actin filaments (QD-nanowires). Despite the "blinking effect" the anisotropy of fluorescence of single QD remains stable and depends mostly on the 3-dimensional orientation of the QD. The fluorescence anisotropy images of QD-actin nanowires demonstrate the variation of anisotropy along and across filaments. The same system was used to study actin filament dynamics in live cells expressing actin fused with green fluorescence protein (GFP).

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