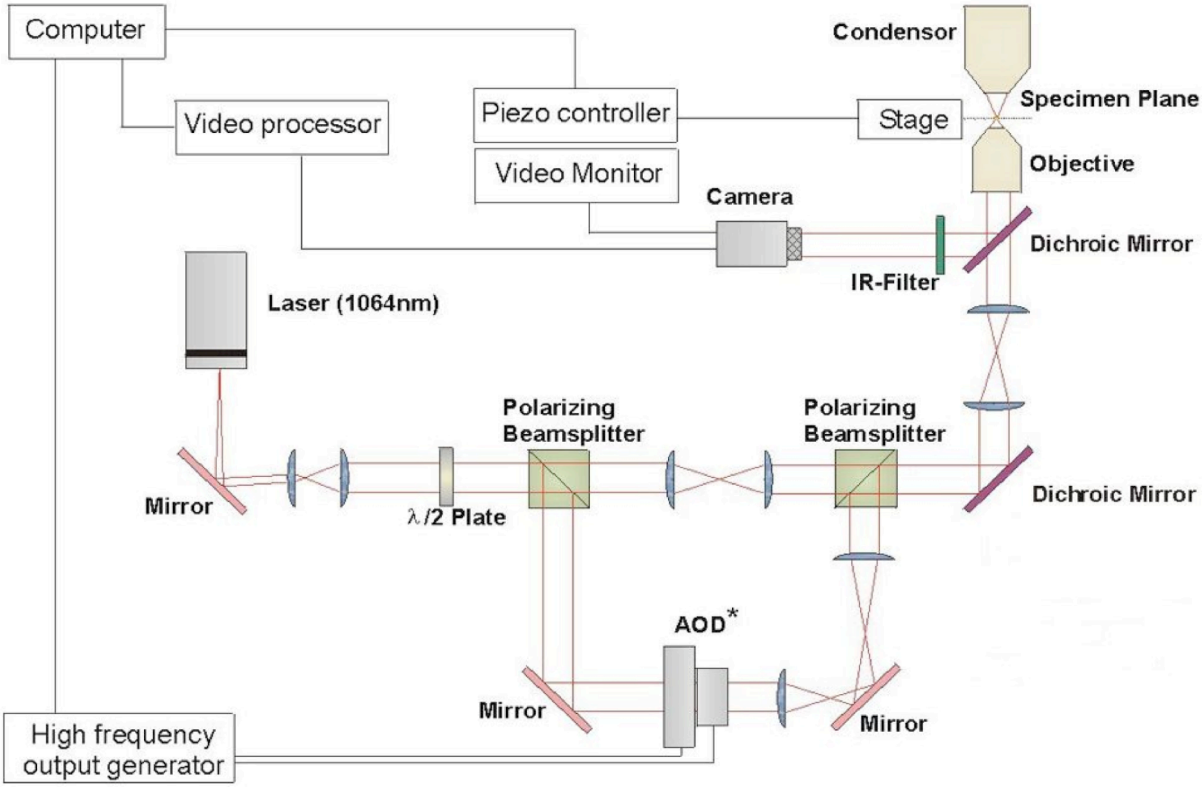
Supplemental Online Material



Schematic diagram illustrating the experimental set-up configuration for the dual optical traps. The solid lines represent the light path; the dashed lines represent controlled devices. A diode pumped neodymium doped orthovanadate (Nd:YVO_4 infrared-laser emitting at 1064nm (Millenia IR, Spectra-Physics) was used as the light source for optical trapping. The beam was split by a polarizing beam splitter (PB1). The relative intensities of the two beams could be controlled by a rotatable λ/2 waveplate (Model 5540, New Focus, CA) that rotates the linear polarization vector. One beam was steered by a pair of acousto-optical deflectors (AODs) (DTD-274HA6, IntraAction) controlled with a PC via a frequency synthesizer card (DVE-40, IntraAction Corp., IL). The AODs are located in a plane conjugate to the microscope objective's back focal plane (BFP). Therefore, changes in the laser beam's angle at the AOD's do not produce changes in position at the objective's BFP. However, changes in beam angle in the BFP result in changes of position in the object plane and thus the trap position can be conveniently controlled by the AODs. The steered beam was combined with the fixed beam by a polarizing beam splitter PB2 and both were directed into the objective (100x 1.3 NA oil immersion Plan-Neofluar, Zeiss) via the epifluorescence port of the inverted microscope. The total power of the fixed and steered beam before the objective was typically 80 and 200 mW, respectively.