

Abstract Submitted
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Undergraduate Construction of Optical Tweezers LAWRENCE HUBBELL, University of Oregon — I will present a poster on the construction of optical tweezers. This will demonstrate the full process one must go through when working on a research project. First I sifted through the internet for papers and information pertaining to the tweezers. Afterwards I discussed the budget with the lab manager. Next I made purchases, however some items, such as the sample mount, needed to be custom made. These I built in the machine shop. Once the tweezers were operational I spent some time ensuring that the mirrors and lenses were adjusted just right, so that the trap performed at full strength. Finally, I used video data of the Brownian motion of trapped silica microspheres to get a reasonable estimate of the trapping stiffness with such particles. As a general note, all of this was done with the intent of leaving the tweezers for future use by other undergraduates. Because of this extra effort was taken to ensure the tweezers were as safe to use as possible. For this reason a visible LASER was chosen over an infrared LASER, in addition, the LASER was oriented parallel to the surface of the table in order to avoid stray upwards beams.

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