

Abstract Submitted
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Construction of a Single Beam Optical Trap with a Modified Design¹ DAVID TO, TANYA DAX, TONI SAUNCY, Angelo State University — We have constructed an apparatus known as an optical tweezers using off the shelf, fairly inexpensive components. These include a 20 mw HeNe laser, a standard student lab optical microscope, and an inexpensive CCD firewire camera. The trap is designed to work with polystyrene spheres of various diameters, but to be robust enough for more advanced research. The goal of the work is to use the device for undergraduate research projects but also for use in the advanced labs at Angelo State. Trapping is achieved in the device by focusing the collimated laser beam using a 100x oil immersion objective on the microscope. At the position of the beam waist, the light produces gradient forces that trap the micron-sized spheres. Images are collected and processed using LabVIEWTM software. Measurement of particle size is accomplished through software tools for use with unknown-sized samples in the future.

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