

Abstract Submitted
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Construction of BSU first optical trap¹ TYLER HOLLOWAY,
Bridgewater State University — Optical traps (laser tweezers) are precision instruments that use lasers in conjunction with microscopes to measure forces of and control biological samples on the scale of proteins and DNA making them extremely useful tools in biophysics and biochemistry. Our project's goal, which was successfully completed, was to construct the first optical trap at Bridgewater State University. Our design was based on AJP "Faster, cheaper, safer optical tweezers for the undergraduate laboratory" Bechhoefer and Wilson 2002. We constructed a microscope from discreet optical components which was able to resolve 1 micrometer diameter fused silica beads in solution. We then used a 35mW 633nm He-Ne laser along with our microscope to successfully trap and control the silica beads in the focus of the laser. Moving forward biological samples will be bonded to the silica beads which can then be controlled using the trap.

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