Abstract Submitted
for the TSS21 Meeting of
The American Physical Society

Optical Tweezers MATTHEW MACASADIA, Texas Lutheran Univ — An "optical tweezers" device was constructed using an obsolete microscope and off-the shelf parts. This apparatus is intended to serve as a demonstration of the forces in a single beam, gradient radiation pressure laser trap for use in the Texas Lutheran University (TLU) advanced lab course. At the start of this project, the tool was disassembled and scavenged for parts for other experiments. Once assembled, the challenge of a low-cost sample illumination mechanism became a roadblock to imaging the particles for trapping. The field of view is on the order of only a few microns, such that illuminating the sample without imaging other artifacts is not a trivial task. In this project, we have developed an innovative light source that combines an ultra-low cost integrating sphere and an off the shelf super bright LED lamp. The light source design and construction, including integration of optics using custom, 3D-printed coupling parts will be discussed.

Matthew Macasadia
Texas Lutheran Univ

Date submitted: 15 Mar 2021 Electronic form version 1.4