

Abstract Submitted
for the CUWIP21 Meeting of
The American Physical Society

Dielectric elastomer actuators: impact of foam tape density on flexibility and feasibility of future prosthetics LYDIA GUERTIN, Haverford College — In light of the expanding field of medical soft robotics and the need to replicate more accurately the fluidity of human motion in prosthetic tissues, researchers have begun exploring dielectric elastomer actuators as a possible replacement for the current prosthetic technological failures. This paper explores the structural support failings of current models of actuators and posits the use of a similar dielectric tape, VHB 5952, in the fashion of current experimental research on VHB tapes. While this tape significantly increases structural support and reduces the potential for tearing in the prosthetic tissue, it is found to be incompatible with the low voltage requirements of a mechanism working in the human body. The conclusion reached of the impossibility of VHB 5952 is used to recommend a possible middle ground between the industry standard of VHB 4910 and increased structural integrity to advance the field of prosthetic engineering.

Lydia Guertin
Haverford College

Date submitted: 30 Dec 2020

Electronic form version 1.4