EFFECTS OF MOLECULAR WEIGHT OF PCL ON ELECTROSPUN PCL PROPERTIES. Karen Sasakura, Manasa Rajeev & Christine C. Helms, Dept. of Physics, Univ. of Richmond. Polycaprolactone (PCL) is a biocompatible polymer that is widely used in biomedical applications. We expect the mechanical properties of electrospun PCL fibers to be influenced by polymer entanglement in a solution which is related to the concentration and polymer molecular weight. Previously, we have investigated entanglement by adjusting the solution concentration of 80 kg/mol molecular weight PCL and measuring the mechanical properties of the resultant electrospun fibers. This current research expands on the previous work by exploring how changing the molecular weight of the polymer has an effect on the fiber mechanics. The first step in this work is identifying identical electrospinning conditions that produce smooth fibers for both 35 kg/mol and 45 kg/mol PCL. 35 kg/mol PCL was dissolved in a 3:1 ratio of Acetic Acid to Formic Acid solution and then subjected to electrospinning to produce fibers. Imaging and the diameter of fibers were characterized using Scanning Electron Microscopy (SEM). Fibers produced from 30 % w/v PCL concentration resulted in beading and inconsistent fibers. As concentration increase beading reduced until at 35 % w/v PCL smooth fibers were formed. Preliminary SEM images and diameter measurements suggest that this molecular weight PCL may not produce a single uniform fiber diameter as both large (> 300 nm) and small (100 nm) diameter populations were seen. Next, we will focus on measuring the mechanical properties of 35 and 45 kg/mol PCL, especially at high strains. Author contact: Karen Sasakura, karen.sasakura@richmond.edu