

The photoelectric effect was an important gateway into our modern understanding of photons' wave-particle duality. We set out to verify Planck's constant and determine the work function of our bulb's cathode. Using various filters and a swept potential, we were able to measure the current of various wavelengths of light from a mercury lamp over a range of voltages. From this current data, we were able to find the stopping potential, and by running a curve fit over all of the wavelengths and their required energies, we calculated Planck's constant using the slope and the work function using the intercept. We found Planck's constant within 6% of the expected value and our cathode's work function at a 30% difference from the expected value for potassium. We thus concluded that the coating on the cathode was a significant enough factor that the work function differed significantly from that of pure potassium.