## Federal University of Santa Catarina (UFSC) Joinville Technological Center (CTJ) Graduate Program in Engineering and Mechanical Sciences (Pós-ECM)

Course: Plasmas and Electrical Discharges in Gases (ECM410054) Professor: Diego A. Duarte

## Electron emission (List 5)

- 1. If the work function of tungsten (as known as wolfram) is 4.52 eV, compute the current emitted by a piece of tungsten wire 2 cm long and 1 mm in diameter when heated to a temperature of 2000 K.
- 2. When potassium is irradiated with monochromatic light of various wavelengths  $\lambda$ , the stopping potential V0 has been determined for every wavelength. Following are the results obtained:

λ	Å	2000	3000	4000	5000
$V_0$	v	4.11	2.05	1.03	0.41

- (a) Plot the data so as to verify Einstein's equation, (b) find the threshold wavelength in angstrom, (d) determine the work function for potassium.
- 3. Find the stopping potential of the photoelectrons emitted by sodium when irradiated with the following monochromatic light of wavelength 400, 500, 600 and 800 nm. The photoelectric threshold of sodium is 680 nm.