

Experiment # 1.13

Electron Energy Loss Investigation through the Nobel Prize Winning Franck-Hertz Experiment (Results)

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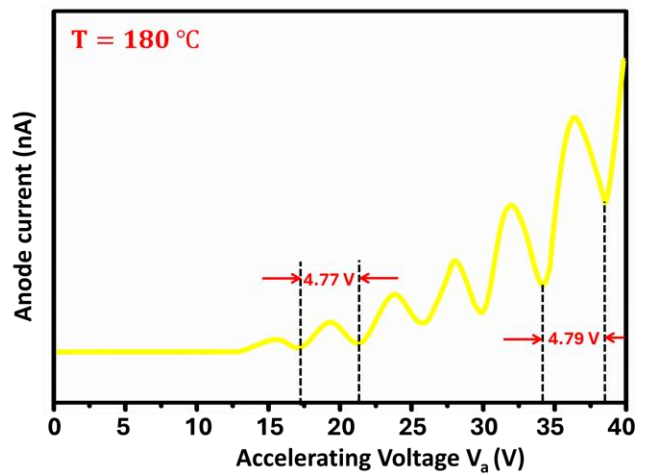
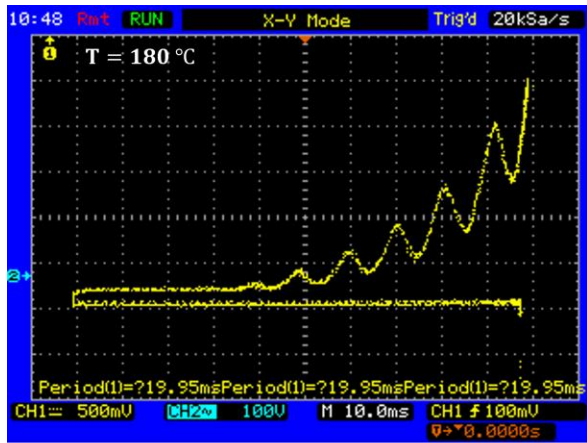
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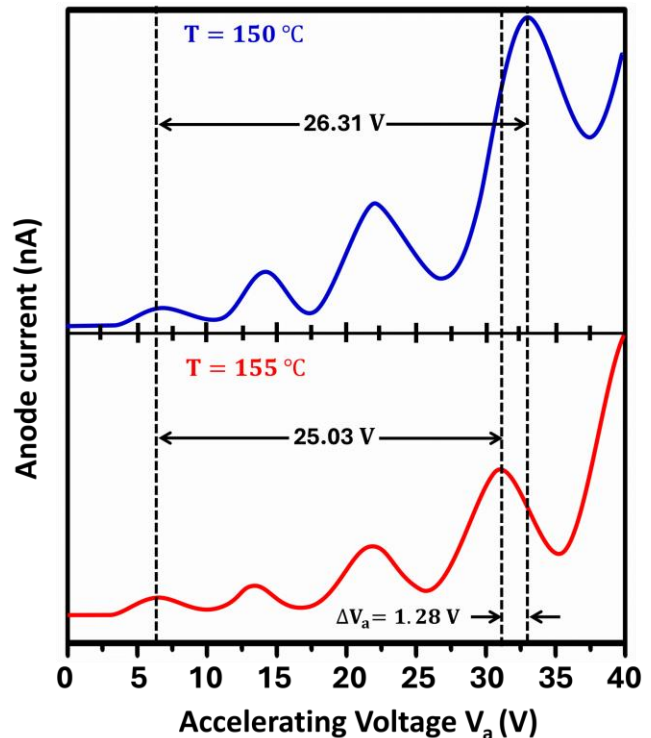
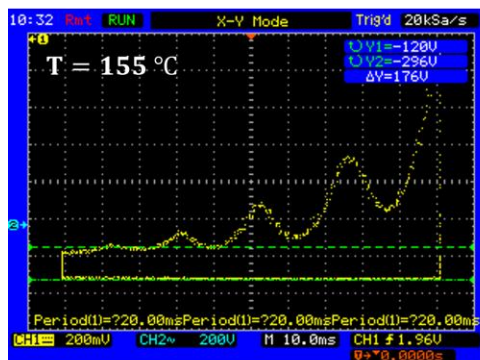
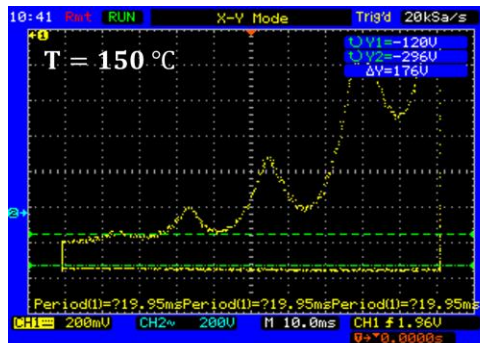
Lahore University of Management Sciences, Pakistan.

Franck-Hertz Experimental Curve



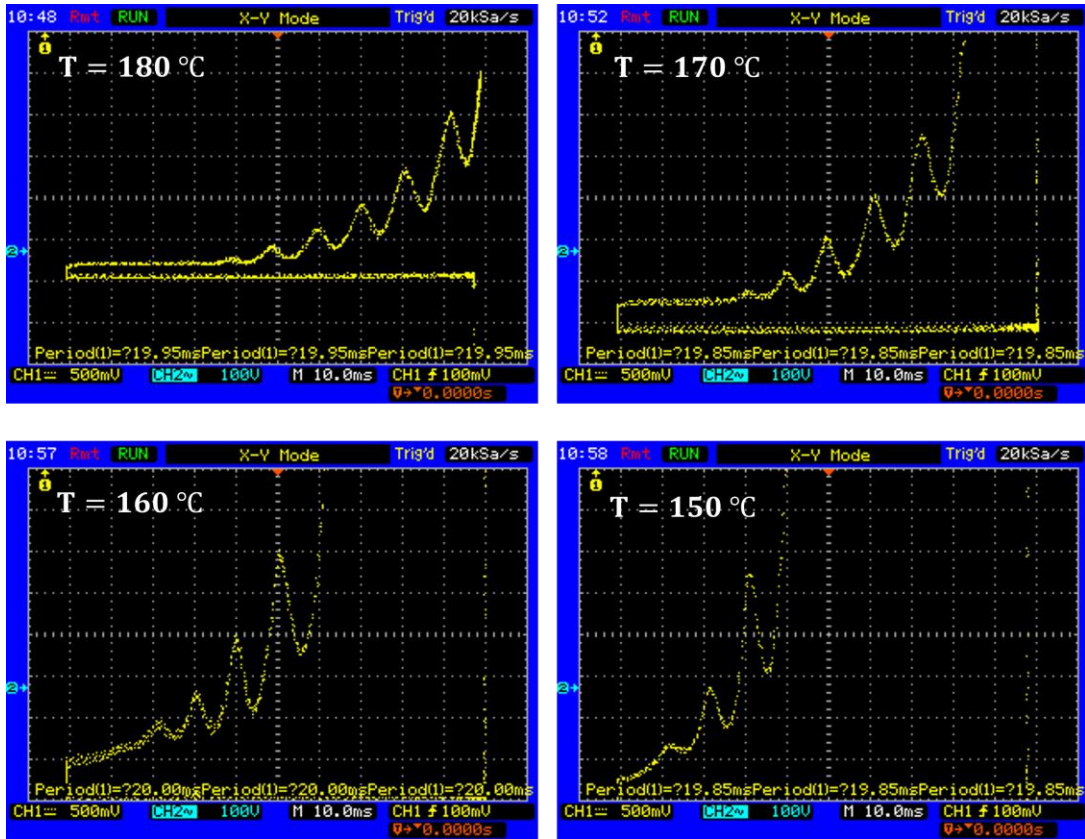
The spacing between the 2nd and 3rd minima is 4.77 V, and between the 6th and 7th is 4.79 V. This slight increase is due to additional acceleration of electrons over the mean free path after reaching excitation energy but before inelastic collisions.

Comparison of Franck-Hertz curve at two different temperatures

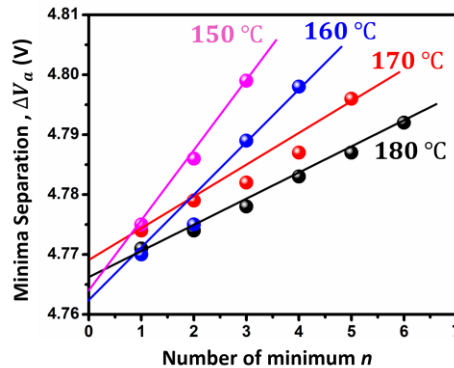


Franck-Hertz curves were recorded with Hg atoms at 150 °C and 155 °C. The curves are horizontally shifted to align two maxima. The figure shows that three spacings at 150 °C correspond to 3.25 spacings at 155 °C. This occurs because increasing tube temperature decreases the electron mean free path due to higher atomic density.

Temperature Dependent series of Franck-Hertz curve while all other factors remain constant



Spacing ΔV_a vs. n



Different Filament currents ($I_1 < I_2 < I_3 < I_4 < I_5 < I_6$) while all other factors remain constant

