# Lab 6

## Data Tables

DATA TABLE 1-1 (*purpose*: to measure the wavelength of He-Ne laser)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *N* | 0 | 50 | 100 | 150 | 200 | 250 |
| *d* (mm) |  |  |  |  |  |  |
| *Δd* (mm) | *Δd1*= *=* | | *Δd2*= *=* | | *Δd3*=*=* | |
|  |  | | | | | |
| (nm) |  | | | | | |

DATA TABLE 1-2 (*purpose*: to measure the index of refraction of air)

Room temperature *T*= ℃; Atmospheric pressure *p*=1.01325×105 Pa;

*L*=95.0 mm; *λ*0=633.0 nm; *m*=60.

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | 1 | 2 | 3 |
| *p*1 (MPa) |  |  |  |
| *p*2 (MPa) |  |  |  |
| *Δp*= (MPa) |  |  |  |
| (MPa) |  | | |
|  |  | | |

Instructor’s Initial:

# Lab 7

## Data Tables

DATA TABLE 2-1 (*purpose*: to measure the apex angle of a prism)

Instrument error:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Position of telescope | Left side (position 1) | | Right side (position 2) | |
| Trial | Vernier 1 | Vernier 2 | Vernier 1 | Vernier 2 |
| *θ*1 (°, ') | *θ*1'(°, ') | *θ*2(°, ') | *θ*2'(°, ') |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| Averaged |  |  |  |  |

DATA TABLE 2-2 (*purpose*: to measure the wavelengths of lines in the spectra of mercury)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diffraction order | *k*=-1(left side) | | | | | | *k*=+1(right side) | | | | | |
| Lines | Yellow 2 | | Yellow 1 | | Green | | Green | | Yellow 1 | | Yellow 2 | |
| Trial | *φ*Y-L21 | *φ*Y-L22 | *φ*Y-L11 | *φ*Y-L12 | *φ*G-L1 | *φ*G-L2 | *φ*G-R1 | *φ*G-R2 | *φ*Y-R11 | *φ*Y-R12 | *φ*Y-R21 | *φ*Y-R22 |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Averaged |  |  |  |  |  |  |  |  |  |  |  |  |

Instructor’s Initial:

# Lab 8

## Data Tables

DATA TABLE 3-1 (Measured by manual mode. *purpose*: to determine the first excitation potential of argon atom)

*V*1*=* ; *V*2*=* ; *V*3*=* ;

(The unit of the current in the following table is )

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 |
| 0 |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |
| 70 |  |  |  |  |  |  |  |  |  |  |

Instructor’s Initial:

DATA TABLE 3-2 (Measured by computer. *purpose*: to determine the first excitation potential of argon atom)

*V*1*=* ; *V*2*=* ; *V*3*=* ;

(The unit of the current in the following table is )

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 |
| 0 |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |
| 70 |  |  |  |  |  |  |  |  |  |  |

Instructor’s Initial:

DATA TABLE 3-3 (Measured by computer. *purpose*: to determine the first excitation potential of argon atom)

*V*1*=* ; *V*2*=* ; *V*3*=* ;

(The unit of the current in the following table is )

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 |
| 0 |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |
| 70 |  |  |  |  |  |  |  |  |  |  |

Instructor’s Initial:

# Lab 9

## DATA TABLE 4-1 (*purpose*: to measure the electric charges carried by an oil droplet)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Oil droplets | Balance voltage  *V*(v) | | Fall time  *t*(s) | |
| Measurement | Averaged | Measurement | Averaged |
| 1 |  |  |  |  |
|  |  |
|  |  |
| 2 |  |  |  |  |
|  |  |
|  |  |
| 3 |  |  |  |  |
|  |  |
|  |  |
| 4 |  |  |  |  |
|  |  |
|  |  |
| 5 |  |  |  |  |
|  |  |
|  |  |
| 6 |  |  |  |  |
|  |  |
|  |  |
| 7 |  |  |  |  |
|  |  |
|  |  |
| 8 |  |  |  |  |
|  |  |
|  |  |
| 9 |  |  |  |  |
|  |  |
|  |  |
| 10 |  |  |  |  |
|  |  |
|  |  |

Instructor’s Initial:

# Lab 10

## Data Tables

DATA TABLE 7-1 (*purpose*: to measure the stopping potentials for different lights)

|  |  |  |
| --- | --- | --- |
| Wavelength  (nm) | Frequency  (Hz) | Stopping potential  (V) |
| 365 |  |  |
| 405 |  |  |
| 436 |  |  |
| 546 |  |  |
| 577 |  |  |

DATA TABLE 7-2 (*purpose*: to measure current-voltage characteristics of the photoelectric tube)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *ΔV* */* V | -2.0 | 0.0 | 2.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 |
| *d*=30cm, *I* */* 10-11A |  |  |  |  |  |  |  |  |
| *d*=40cm, *I* */* 10-11A |  |  |  |  |  |  |  |  |
| *ΔV* */* V | 14.0 | 16.0 | 18.0 | 20.0 | 22.0 | 24.0 | 28.0 | 30.0 |
| *d*=30cm, *I* */* 10-11A |  |  |  |  |  |  |  |  | |
| *d*=40cm, *I* */* 10-11A |  |  |  |  |  |  |  |  | |
| *ΔV* */* V | 32.0 | 34.0 | 36.0 | 38.0 | 40.0 | 43.0 | 46.0 | 50.0 | |
| *d*=30cm, *I* */* 10-11A |  |  |  |  |  |  |  |  | |
| *d*=40cm, *I* */* 10-11A |  |  |  |  |  |  |  |  | |

Instructor’s Initial:

# Lab 11

## Data Tables

DATA TABLE 8-1 (*purpose*: to measure the emf produced by a thermocouple)

Room temperature Multiple of the potentiometer

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Temperature, *T* (℃) | 35 | 45 | 55 | 65 | 75 | 85 |
| Thermal emf,  *E*x (mV) |  |  |  |  |  |  |

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