光电效应测定普朗克常数

数据处理实验报告

五、数据处理

① 原始数据（#phi#）

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 波长 | | #r-l1# | #r-l2# | #r-l3# | #r-l4# | #r-l5# |
| 频率 | | #r-v1# | #r-v2# | #r-v3# | #r-v4# | #r-v5# |
| 截止电压 | 手动 | #r-um1# | #r-um2# | #r-um3# | #r-um4# | #r-um5# |
| 自动 | #r-ua1# | #r-ua2# | #r-ua3# | #r-ua4# | #r-ua5# |

作图为：

可见，与成线性关系，爱因斯坦方程成立。

② 图示法求直线的斜率

可得：#s1-k#，#s1-h#，相对误差#s1-eta# %

③ 线性回归法计算普朗克常数

设回归直线为，其中，，。

则#s2-b#，#s2-r#

#s2-h#，与图示法结果比较相对误差#s12-eta# %

④ 不同频率下的伏安特性曲线

（#phi#，#lbd1#）

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | #1-u1# | #1-u2# | #1-u3# | #1-u4# | #1-u5# | #1-u6# | #1-u7# | #1-u8# | #1-u9# | #1-u10# |
|  | #1-i1# | #1-i2# | #1-i3# | #1-i4# | #1-i5# | #1-i6# | #1-i7# | #1-i8# | #1-i9# | #1-i10# |

（#phi#，#lbd2#）

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | #2-u1# | #2-u2# | #2-u3# | #2-u4# | #2-u5# | #2-u6# | #2-u7# | #2-u8# | #2-u9# | #2-u10# |
|  | #2-i1# | #2-i2# | #2-i3# | #2-i4# | #2-i5# | #2-i6# | #2-i7# | #2-i8# | #2-i9# | #2-i10# |

（#phi#，#lbd3#）

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | #3-u1# | #3-u2# | #3-u3# | #3-u4# | #3-u5# | #3-u6# | #3-u7# | #3-u8# | #3-u9# | #3-u10# |
|  | #3-i1# | #3-i2# | #3-i3# | #3-i4# | #3-i5# | #3-i6# | #3-i7# | #3-i8# | #3-i9# | #3-i10# |

（#phi#，#lbd4#）

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | #4-u1# | #4-u2# | #4-u3# | #4-u4# | #4-u5# | #4-u6# | #4-u7# | #4-u8# | #4-u9# | #4-u10# |
|  | #4-i1# | #4-i2# | #4-i3# | #4-i4# | #4-i5# | #4-i6# | #4-i7# | #4-i8# | #4-i9# | #4-i10# |