**邻二氮菲吸光光度法测定铁**

**1.条件实验数据及结果**

（1）吸收曲线的绘制

**表1 不同吸收波长下的吸光度**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| λ/nm | 440 | 450 | 460 | 470 | 480 | 490 | 495 | 500 |
| A | 0.329 | 0.358 | 0.375 | 0.407 | 0.431 | 0.441 | 0.448 | 0.457 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| λ/nm | 505 | 510 | 515 | 520 | 530 | 540 | 550 |
| A | 0.467 | 0.473 | 0.464 | 0.438 | 0.346 | 0.221 | 0.120 |

最大吸收波长： 510 nm

（2）溶液酸度的选择

**表2 不同酸度下的吸光度**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 容量瓶编号 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| pH |  | 2.01 | 2.23 | 5.40 | 6.37 | 6.64 | 9.86 | 11.63 |
| A | 0.016 | 0.175 | 0.335 | 0.353 | 0.335 | 0.344 | 0.323 | 0.274 |

pH范围：3.00 ~ 6.00

（3）显色剂用量的选择

**表3 不同显色剂用量时的吸光度**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vphen / ml | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 |
| A | 0.059 | 0.131 | 0.205 | 0.265 | 0.340 | 0.347 | 0.351 | 0.346 |

显色剂用量：3.2 ~ 4.2 mL

（4）显色时间

**表4 不同显色时间时的吸光度**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 放置时间t/min | 0 | 5 | 10 | 30 | 60 | 120 |
| A | 0.298 | 0.302 | 0.302 | 0.302 | 0.302 | 0.296 |

显色时间：0 ~ 5 min

稳定时间：5 ~ 60 min

由以上实验可得出最佳实验条件：波长510 nm、pH 3.00 ~ 6.00、显色剂用量3.2 ~ 4.2 mL、显色时间5 ~ 60 min

**2.试样分析**

标准曲线的制作

**表5 铁标准曲线的制作**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 溶液 | 标准铁溶液 | | | | | | 试验溶液 | |
| V Fe/ml | 0.0 | 2.0 | 4.0 | 6.0 | 8.0 | 10.0 | 试样1号 | 试样2号 |
| m Fe/μg | 0 | 40 | 80 | 120 | 160 | 200 |  |  |
| 吸光度 A | 0 | 0.133 | 0.302 | 0.468 | 0.61 | 0.757 | 0.323 | 0.274 |

试样1号：m Fe = 87 μg

试样2号：m Fe = 74 μg

**3.组成比、摩尔吸光系数及平衡常数**

组成比测定

**表6 组成比的测定**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 容量瓶编号 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| c phen/ c Fe2+ | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 |
| A | 0.059 | 0.131 | 0.205 | 0.265 | 0.340 | 0.347 | 0.350 | 0.351 |

A max = 0.350