**班号\_\_\_\_\_\_\_\_\_\_\_ 学号\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 姓名\_\_\_\_\_\_\_\_\_\_\_\_ 教师签字\_\_\_\_\_\_\_\_\_\_\_\_**

**实验日期\_\_\_\_\_\_\_\_ 组号\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 预习成绩\_\_\_\_\_\_\_\_\_ 总成绩\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**实验名称** **用示波器观测磁滞回线**

1. **实验目的**
2. **实验预习**

**1.** 剩磁、矫顽力、基本磁化曲线、动态磁滞回线的定义：

2.示波器测量的*X*轴信号*Ux*是谁的电压？和磁场强度*H*是什么关系（写出公式）？示波器测量的*Y*轴信号*Uy*是谁的电压？和磁感应强度*B*是什么关系（写出公式）？

1. **实验现象及数据记录**

**样品1：饱和磁滞回线**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 频率 | *R*1 | *R*2 | *C* |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 40 *Hz* |  |  |  | *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |
|  | | | |  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |

**样品1：基本磁滞回线**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 频率 | *R*1 | *R*2 | *C* |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 40 *Hz* |  |  |  | *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |

**样品2：饱和磁滞回线**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 频率 | *R*1 | *R*2 | *C* |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 40 *Hz* |  |  |  | *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |
|  | | | |  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |

**样品2：基本磁滞回线**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 频率 | *R*1 | *R*2 | *C* |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 40 *Hz* |  |  |  | *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |

**样品2：饱和磁滞回线**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 频率 | *R*1 | *R*2 | *C* |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 100 *Hz* |  |  |  | *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |
|  | | | |  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| *UX* |  |  |  |  |  |  |  |  |  |  |
| *UY* |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| **教师** | **姓名** |
| **签字** |  |

1. **数据处理及作图**

请完成两个样品的磁滞回线和基本磁化曲线作图（软件作图或坐标纸）；

对比两个样品同一频率下磁滞回线；对比样品2不同频率下磁滞回线；

请计算两个样品的剩磁和矫顽力；

1. **实验结论及现象分析**

样品1和样品2区别以及频率对磁滞回线的影响

1. **讨论问题**
2. 某两种材料的磁滞回线，一个很宽一个很窄，它们各属于哪类磁性材料？分别可以应用于什么场合？
3. 一钢制部件不慎被磁化，请设计一种退磁方案。