PHYS 1444 – Section 003
Lecture #18

Wednesday, Nov. 2, 2005

Dr. Jaehoon Yu

- Magnetic Materials – Ferromagnetism
- Magnetic Fields in Magnetic Materials; Hysteresis
- Induced EMF
- Faraday's Law of Induction
- Lenz's Law
- EMF Induced on a Moving Conductor

Announcements

- The 2nd term exam
  - Date: Monday, Nov. 7
  - Time: 1 – 2:20pm
  - Location: SH 103
  - Coverage: from CH 26 to CH29 – 3
- Your textbooks
  - UTA bookstore agreed to exchange your books with the ones that has complete chapters
    - You need to provide a proof of purchase
      - Receipts, copy of cancelled checks, credit card statement, etc.

Magnetic Materials - Ferromagnetism

- Iron is a material that can turn into a strong magnet
  - This kind of material is called **ferromagnetic** material
- In microscopic sense, ferromagnetic materials consists of many tiny regions called **domains**
  - Domains are like little magnets usually smaller than 1mm in length or width
- What do you think the alignment of domains are like when they are not magnetized?
  - Randomly arranged
- What if they are magnetized?
  - The domains aligned with the external magnetic field direction grows while domains not aligned reduce
  - This gives magnetization to the material
- How do we demagnetize a bar magnet?
  - Hit the magnet hard or heat it over the Curie temperature