CENTRAL LABORATORY

ARGE Eğitim ve Ölçme Merkezi

ODTÜ, Ankara

Elektron Spin Resonance Laboratory (ESRL)

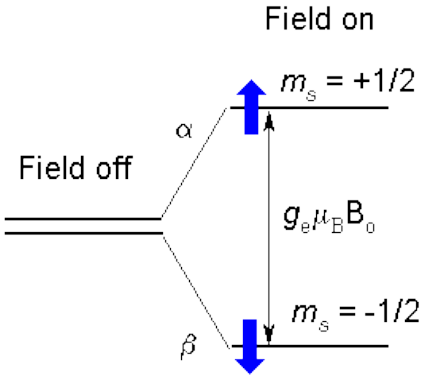
BASIC PRINCIBLES

Electron Spin Resonance is a spectroscopic teqniuqe that uses the spins of unpaired electrons in the material.

Similar to Magnetic Resounance teqniuqe, Electron Spin Resounance technique basis on catching the resonance of magnetic field but differs from NMR, using electron spins instead of nuclear spins.

Usage Areas

- **Radicals in the material**
- **Elements including unpaired electrons**
- **Defects in single crystals**
- **Dosimetric works**
- **Archaeological ang geological works**



Analysis Frequncies:

- **X Band (10 GHz)**
- **Q Band (35 GHz)**

Analysis Modes:

- **CW (Continous Wave Mode)**
- **PM (Pulsed Mode)**

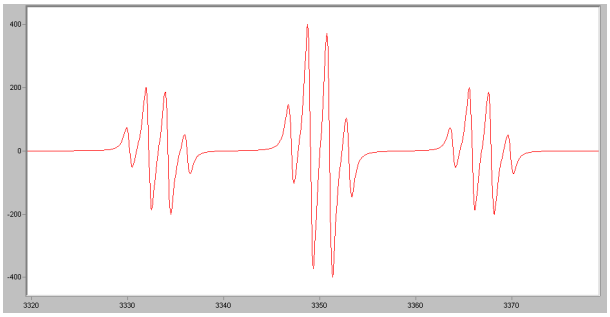
Analysis Temperetures:

- **RT (Room Tempereture)**
- **LN (Liquefied Nitrogen 70 K)**
- **LH (Liquefied Helium 4 K)**

Sample Conditions:

- **Solid**
- **Liquid**
- **Powder**

Spectrum:
In ESR Spectrum, unpaired electrons in the material are excited by external microwave frequency. The material is under high magnetic field. The spin moments of electrons align in resonance condition due to the magnetic field and ESR spectrum is generated by observing the change in the given external microwave.



In ESR, spectrum is generated by obtaining the 'g' value by external microwave frequency is not changed but magnetic field frequency is changed.

CONTACT INFORMATION

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