

## MAGNETIC SUSCEPTIBILITY BALANCES

### SHERWOOD SCIENTIFIC LTD



Sherwood Scientific's Mk1 and Auto Magnetic Susceptibility Balances are utilised for detecting and quantifying the magnetic properties of gases, liquids and solids. Our Mk 1 balance adheres closely to the Late Professor Evans' original design, whilst the MSB AUTO is a microprocessor controlled balance. Improved sensitivity, versatility and overall performance make it ideally suited to new applications in the research laboratory and industrial quality control.

#### **MAGNETIC SUSCEPTIBILITY AT THE MOLECULAR LEVEL**

The magnetic properties of a sample are determined by the nature of the electrons within its structure. Free, unpaired, electrons give rise to magnetic forces which are attracted to a strong magnetic field. The strength of the attractive force is directly proportional to the number of free electrons. Materials with free electrons are classified paramagnetic and those without are diamagnetic. Crystallinity, chemical reactions, oxidation states; anything altering a compound's electronic configuration may also change its magnetic properties.

#### **APPLICATION OF MAGNETIC SUSCEPTIBILITY MEASUREMENTS**

The following illustrates a variety of possible applications:

- Wear particulate analysis directly on lubricating oils
- Examination of chemical reactions on a micro scale
- Characterisation of Ion exchange adsorption and desorption processes
- Measurement of concentration and size of magnetic beads
- Analysis of rare earth elements and their oxidation states
- Qualitative analysis of metal complexes
- QC of catalysts in the petrochemical and plastics industries
- QC of Industrial diamonds for trace metal contaminants
- Measurement of synthetic diamonds
- Archaeological studies of soil samples to indicate human occupation
- Measurement of the oxidation state of haemoglobin
- Quality control in the fabrication of superconductors

**For further information please visit [www.sherwood-scientific.com](http://www.sherwood-scientific.com)**