

Organic Analysis

Andrew Lorimer

1 Mass Spectrometry

Separation of particles by mass

Identifies molecules by searching for:

1. The molecular ion M^+
2. Fragments of the molecule (as ions)

Process

1. Sample species are bombarded with electrons
2. Positive ions are formed by detaching electrons
3. Ions are accelerated by an electric field
4. Accelerated ions are deflected by a magnetic field in a circular radius

$$\text{deflection radius} \propto \frac{m}{z}$$

$$\begin{aligned} \therefore \quad \uparrow \text{mass} &\implies \downarrow \text{deflection} \implies \uparrow \text{radius} \\ \uparrow \text{charge} &\implies \uparrow \text{deflection} \implies \downarrow \text{radius} \end{aligned}$$

2 IR Spectroscopy

3 Magnetic resonance imaging