

## Masterclass 3: HPLC Detection- 1 day

### 0900-1100

Parameters common to all detectors

- Linearity, Sensitivity and Selectivity
- Drift, Noise, Signal to noise ratio
- Dynamic range, Autozero and Response time
- Rear electrical connections

UV-Vis Detection

- Principles of UV-Vis adsorption
- Optical layout
- Lamps- deuterium and tungsten
- Bandwidth, wavelength choice, peak detection
- Flow cell

### 1115-1300

Diode Array Detection

Fluorescence Detection

- Selection of absorption and emission wavelengths
- Fluorescence quantum efficiency
- Lamp and cell types
- Fluorescence derivatisation
- Selectivity

Refractive Index Detection

- Principles and applications
- Advantages and disadvantages
- Sensitivity

### 1400-1700

Evaporative Light Scattering Detection

- Principles and applications
- Nebulisation, light source
- Eluent choice
- Maintenance and Troubleshooting

Electrochemical Detection

- Principles and applications
- Electrode materials
- Coulometric and Amperometric Detection
- Selection of Eluent and applied potential
- HPLC requirements for electrochemical detection

Conductivity Detection

- Principles
- Dual column vs single column
- Solvent front and eluent choice
- Sensitivity- anion or cation chromatography

Mass Spectrometry Detection

- Principles of Mass Spectrometry- Mass/Charge ratio, mass spectrum, molecular ions, isotopes
- Interfaces and ionisation sources- ESI, APCI, CF-FAB, MALDI, Thermospray
- Mass Analysers- Quadrupole, Time of Flight, Ion Trap, Sectors, Fourier Transform
- Single Ion monitoring and Fragmentation patterns
- Quantitation

Discussion and questions