

---

## Masterclass 2: HPLC Columns- 1 day

---

### 0900-1100

---

Column packing materials

Column selection and design

- Pellicular, irregular, spherical, monolithic, core shell packing materials
- Particle size and pore size
- Type A and Type B Silicas, end capping and pH limitations of silica bonded phases

Normal phase and reversed phase separations

HPLC Column hardware

- Diameter and length
- End-fittings and ferrule lock distance
- Column flow direction
- Peak Asymmetry

Questions and Discussion Session

### 1115-1300

---

HPLC Column problems

Column Loading Capacity

Scale down to microbore & narrowbore

Column protection and regeneration

Polymer-based HPLC Columns- Polymethacrylate, Styrene/divinyl benzene co-polymer, polyvinyl alcohol, Polyhydroxymethacrylate

Chiral HPLC Columns

Questions and Discussion session

### 1400-1700

---

Gel permeation Chromatography

Gel filtration Chromatography

Hydrophobic Interaction Chromatography

Hydrophilic Interaction Chromatography (HILIC)

Ion Exchange Chromatography

Ion Chromatography

Ligand Exchange Chromatography

Scaling up to prep and semi-prep HPLC

- Calculating column size required
- Calculating new flow rate
- System changes - pump heads, injection valve, tubing, autosampler, flow cell etc
- Method development
- Solvent recycling
- Peak collection

Discussion