

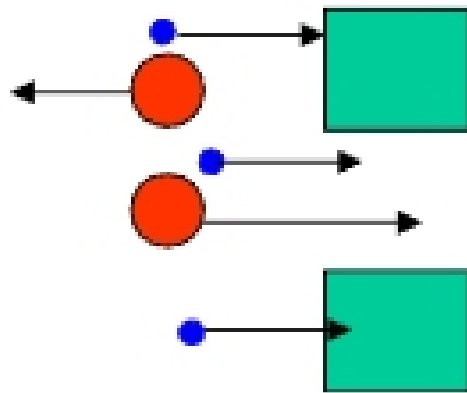
Liquid Chromatography

- 1. Introduction and Column Packing Material**
- 2. Retention Mechanisms in Liquid Chromatography**
- 3. Method Development**
- 4. Column Preparation**
- 5. General Instrumental aspects**
- 6. Detectors**

(Chapter 4 and 5 in The essence of chromatography)

Size exclusive chromatography for polymer and bio-polymer

Standard entropy effect



$$K = \left(1 - \frac{2a}{d_c}\right)^2$$

Retention of a solute is dependent on Standard entropy effect.

Diameter of the pore is very important for solute selectivity.

Multiple pore sizes should be used for separate solutes with different sizes.

GPC: Gel permeation Chromatography (polymer scientists)
GFC: Gel filtration Chromatography (biochemists)

Material and trade name	Fractionation range* (molecular weight)
<i>Dextran</i>	
Sephadex G-10	0-700
Sephadex G-25	1000-5000
Sephadex G-50	1500-30,000
Sephadex G-75	3000-70,000
Sephadex G-100	4000-150,000
Sephadex G-150	5000-300,000
Sephadex G-200	5000-800,000
<i>Polyacrylamide</i>	
Bio-gel P-2	100-1800
Bio-gel P-6	1000-6000
Bio-gel P-60	3000-60,000
Bio-gel P-150	15,000-150,000
Bio-gel P-300	60,000-400,000
<i>Agarose</i>	
Sepharose 2B	$2 \times 10^6 - 25 \times 10^6$
Sepharose 4B	$3 \times 10^5 - 3 \times 10^6$
Sepharose 6B	$10^4 - 20 \times 10^6$
Bio-gel A-0.5 M	10,000-500,000
Bio-gel A-15 M	40,000- 15×10^6
Bio-gel A-150 M	$1 \times 10^6 - 150 \times 10^6$