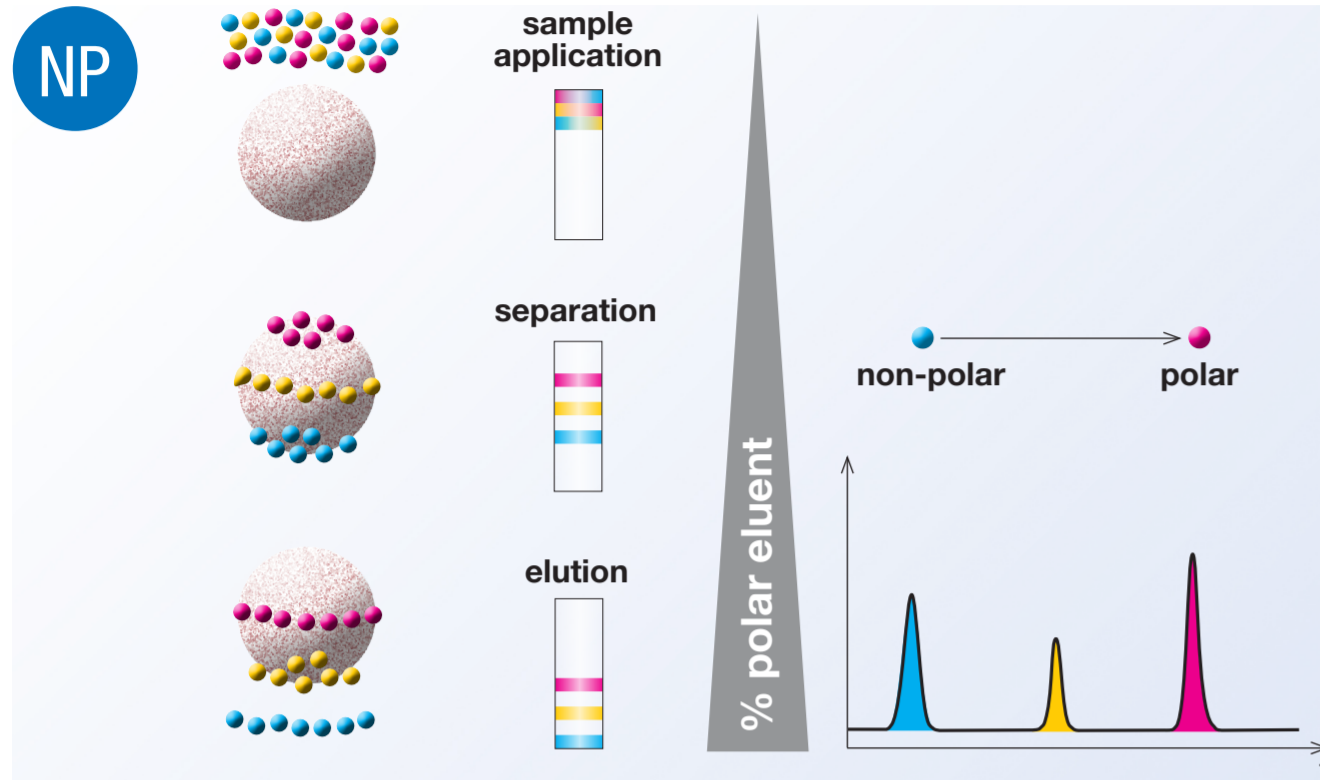


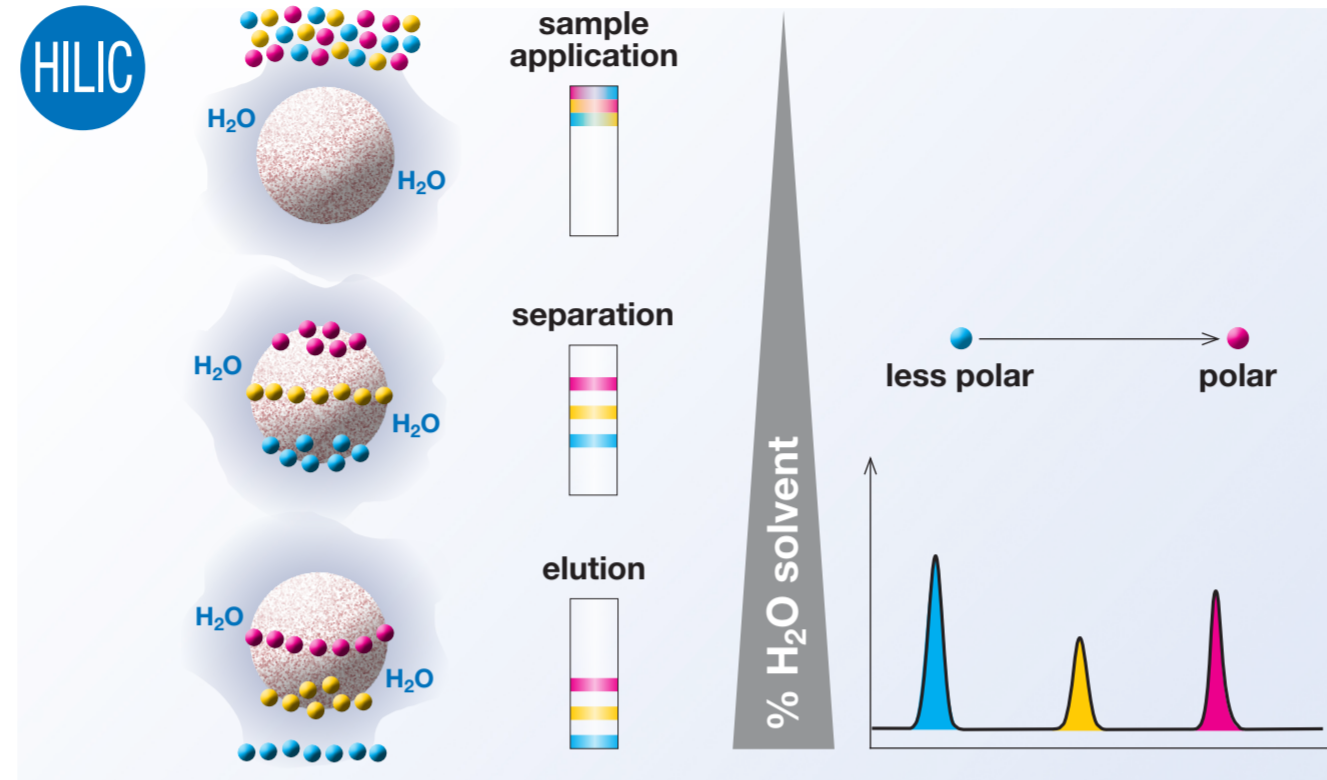
The principles of liquid chromatography



Normal Phase Chromatography

How are compounds separated? Hydrophilic interactions/adsorption
 Stationary Phase: Polar
 Mobile Phase: Non-Polar
 Elution order: First non-polar compounds, last polar compounds

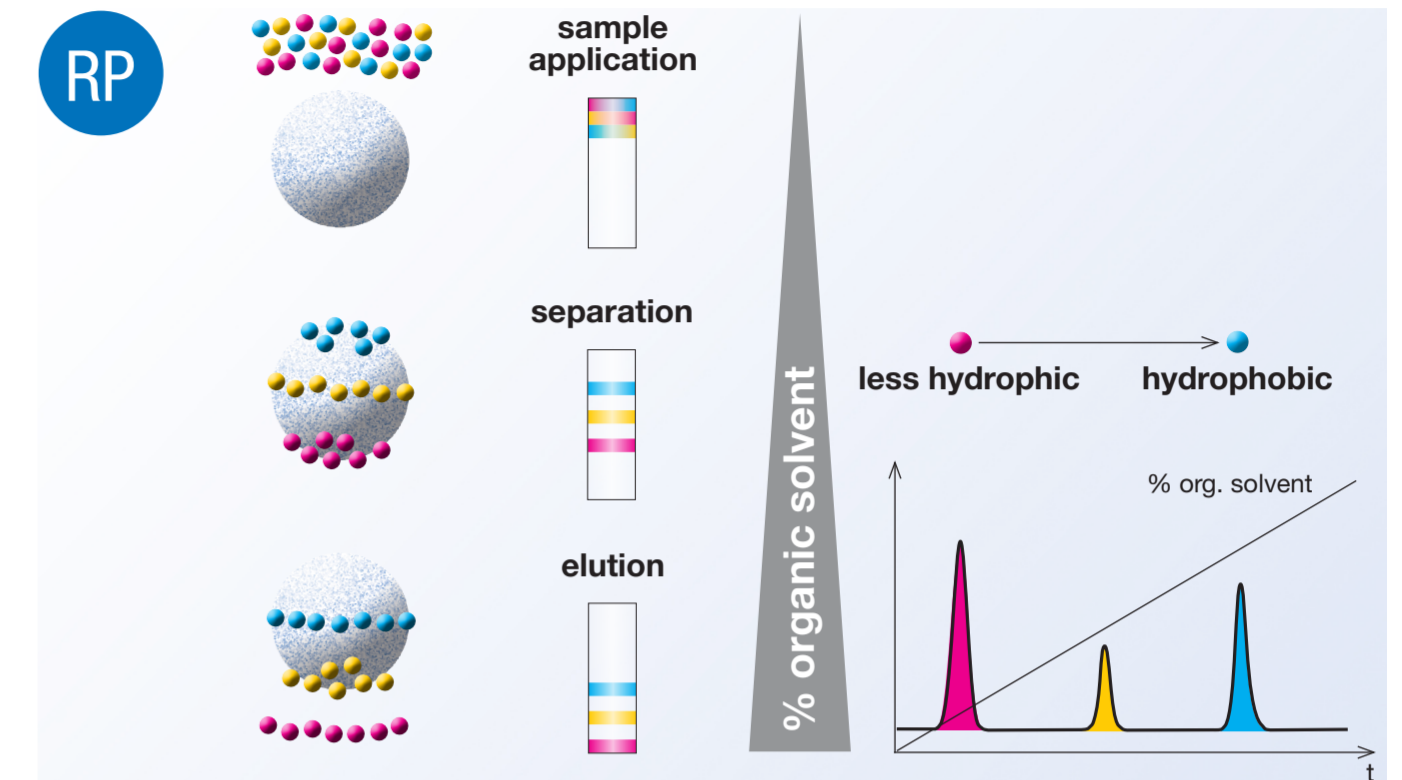
- YMC-Pack SIL
- YMC-Pack PVA-SIL
- YMC-Pack CN
- YMC-Pack Polyamine II
- YMC-Pack NH₂ (Amino)
- YMC-Pack Diol-NP



Hydrophilic Interaction Chromatography (HILIC)

How are compounds separated? Hydrophilic interactions
 Stationary Phase: Polar with water layer at the surface
 Mobile Phase: Polar (RP-eluents)
 Elution order: First less polar compounds, last polar compounds

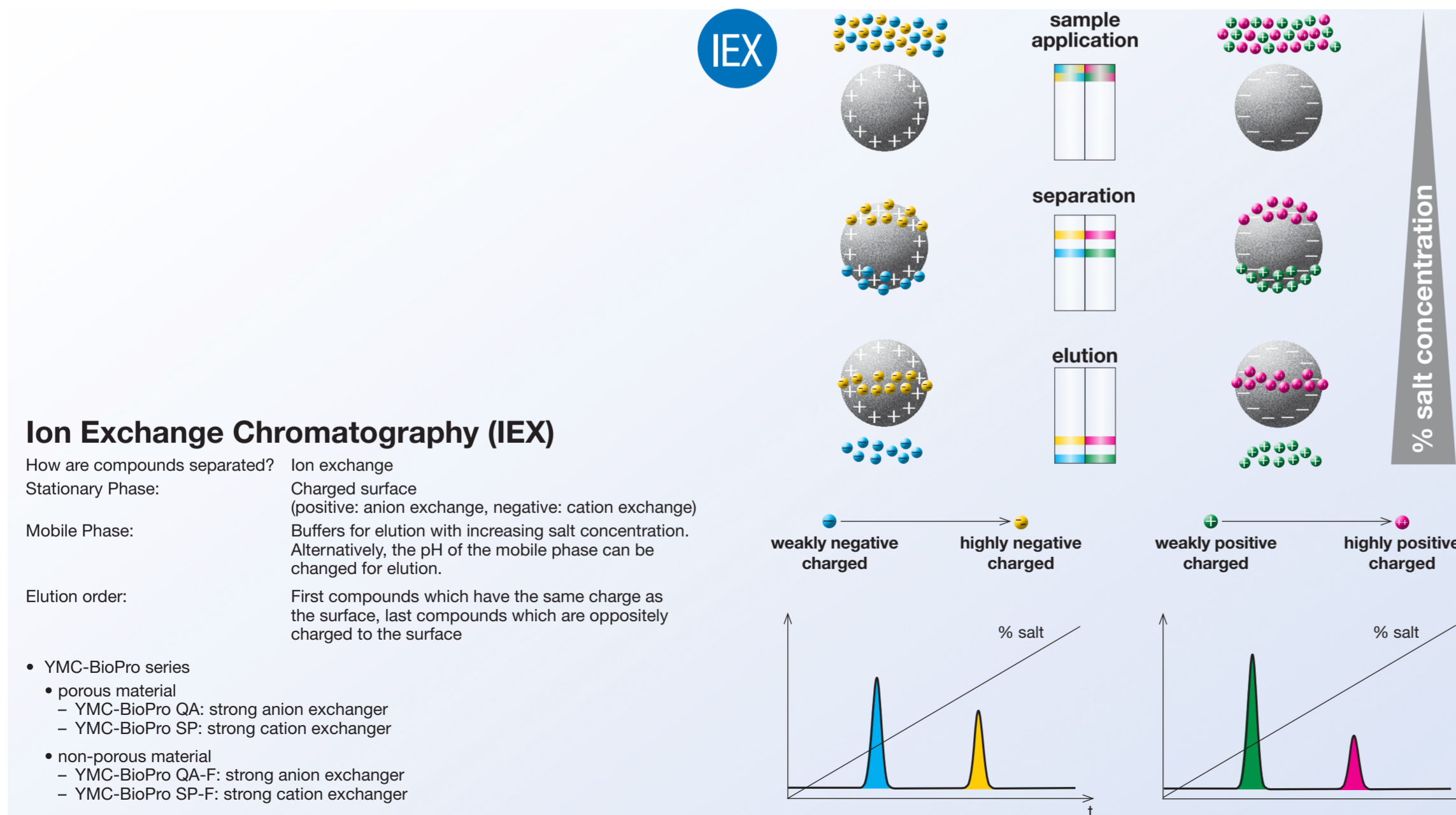
- all available YMC NP-phases
- YMC-Triart Diol-HILIC



Reversed Phase Chromatography

How are compounds separated? Hydrophobic interactions/distribution
 Stationary Phase: non-polar
 Mobile Phase: polar, mixtures of water and organic solvents
 Elution order: First less hydrophobic compounds, last hydrophobic compounds

- C30 = YMC Carotenoid
- C18 = YMC-Triart, YMC-Pack, YMC-Pack Pro, Meteoric Core, J'Sphere ODS, Hydrosphere
- C8 = YMC-Triart, Meteoric Core, YMC-Pack, YMC-Pack Pro
- Phenyl = YMC-Pack, YMC-Triart
- C4 = YMC-Pack
- C1 = YMC-Pack TMS

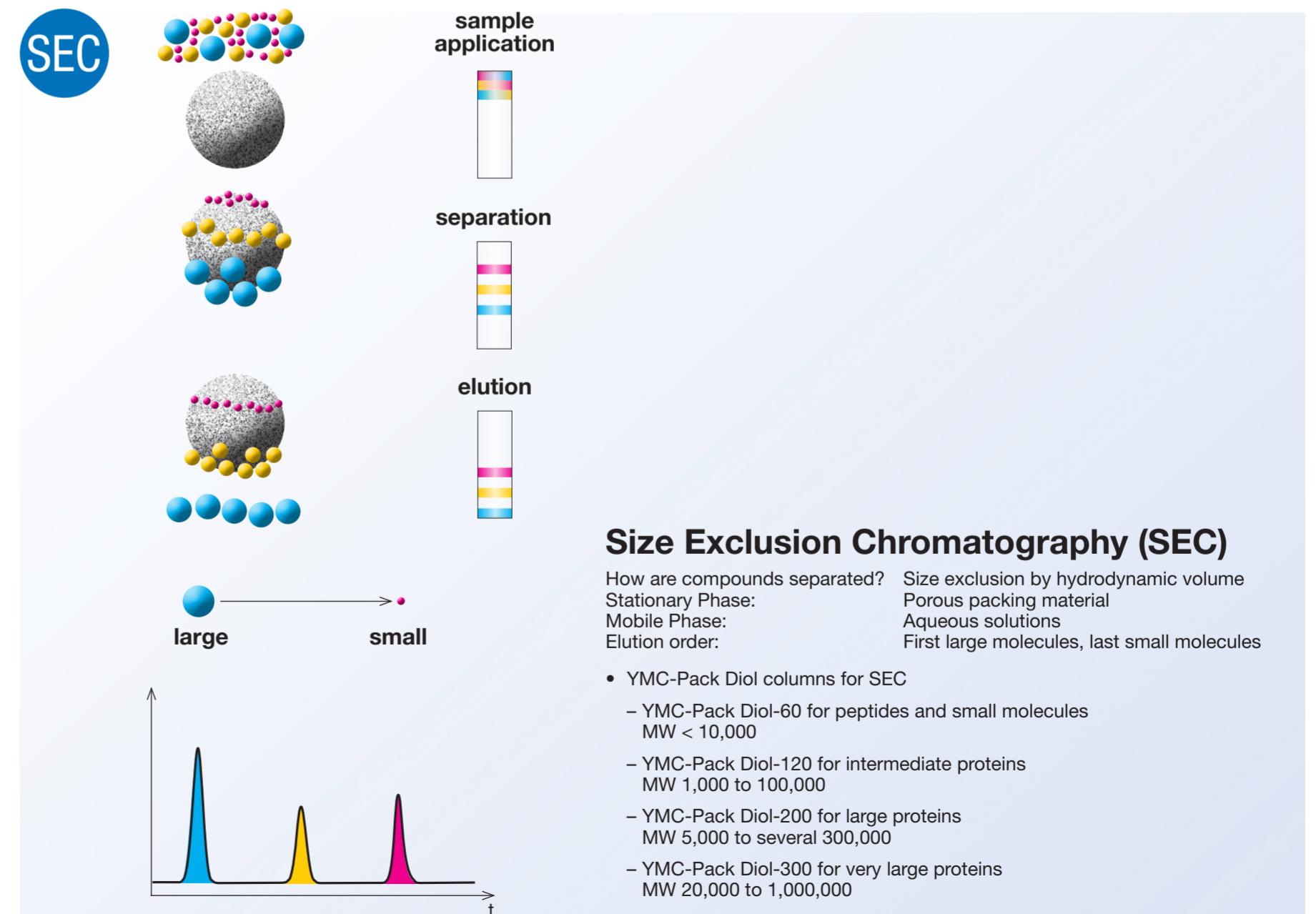


Ion Exchange Chromatography (IEX)

How are compounds separated? Ion exchange
 Stationary Phase: Charged surface (positive: anion exchange, negative: cation exchange)
 Mobile Phase: Buffers for elution with increasing salt concentration. Alternatively, the pH of the mobile phase can be changed for elution.

Elution order: First compounds which have the same charge as the surface, last compounds which are oppositely charged to the surface

- YMC-BioPro series
- porous material
 - YMC-BioPro QA: strong anion exchanger
 - YMC-BioPro SP: strong cation exchanger
- non-porous material
 - YMC-BioPro QA-F: strong anion exchanger
 - YMC-BioPro SP-F: strong cation exchanger



Size Exclusion Chromatography (SEC)

How are compounds separated? Size exclusion by hydrodynamic volume
 Stationary Phase: Porous packing material
 Mobile Phase: Aqueous solutions
 Elution order: First large molecules, last small molecules

- YMC-Pack Diol columns for SEC
 - YMC-Pack Diol-60 for peptides and small molecules MW < 10,000
 - YMC-Pack Diol-120 for intermediate proteins MW 1,000 to 100,000
 - YMC-Pack Diol-200 for large proteins MW 5,000 to several 300,000
 - YMC-Pack Diol-300 for very large proteins MW 20,000 to 1,000,000