



Scientific Equipment and
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Science Together

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How to purify?

Overview of common separation modes,
applications and purification strategies



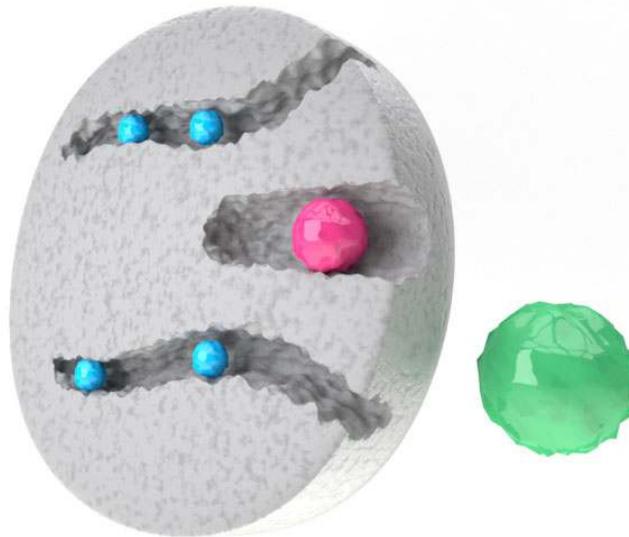
What are the most common separation modes?

Overview of common separation modes

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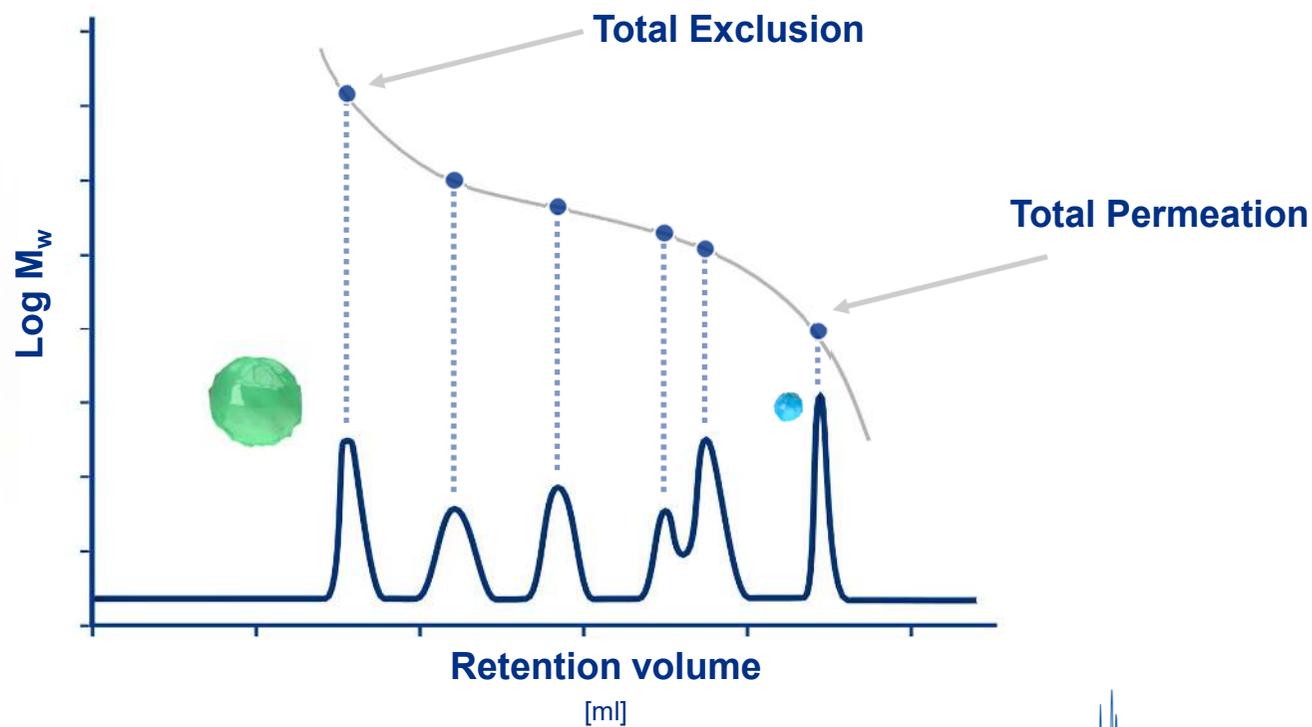
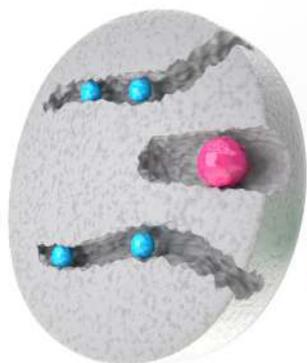


Size Exclusion Chromatography

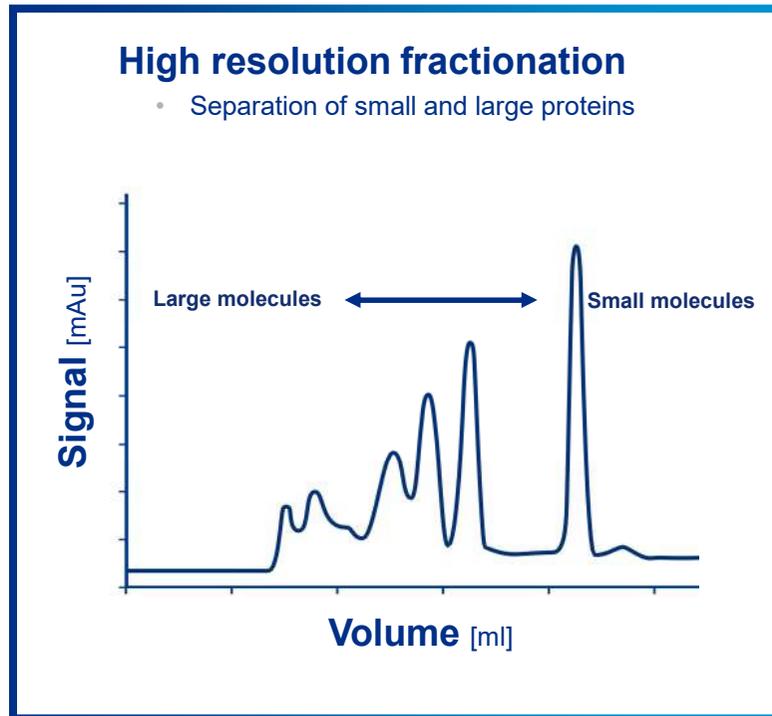


Size exclusion chromatography/SEC separates molecules according to their different molecular size under native conditions

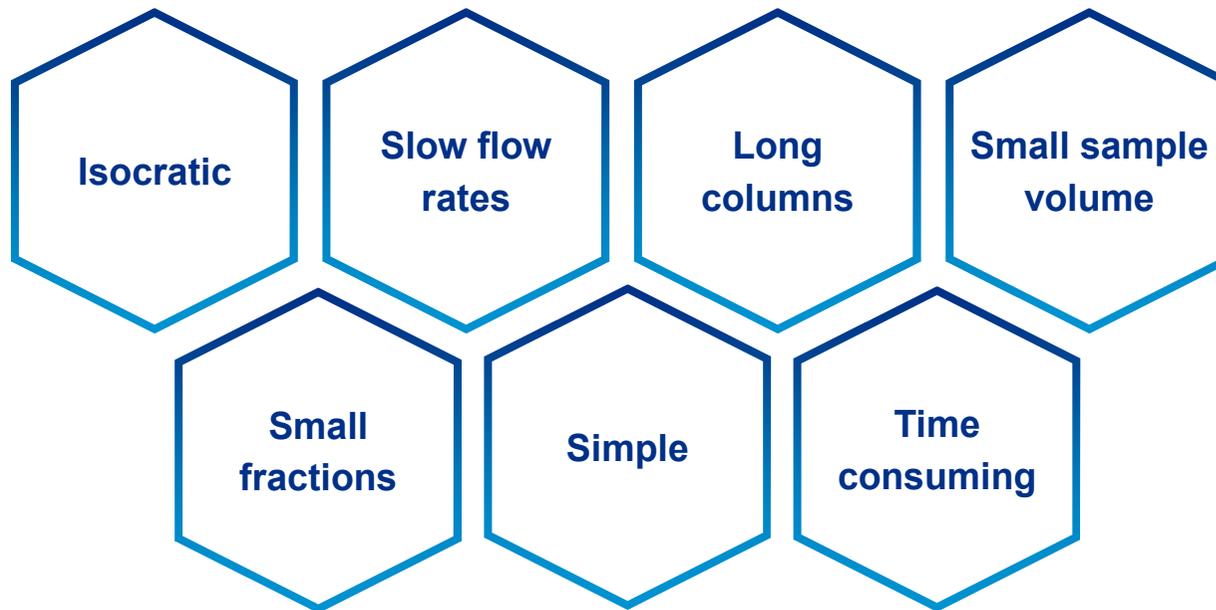
Size Exclusion Chromatography



Size Exclusion Chromatography

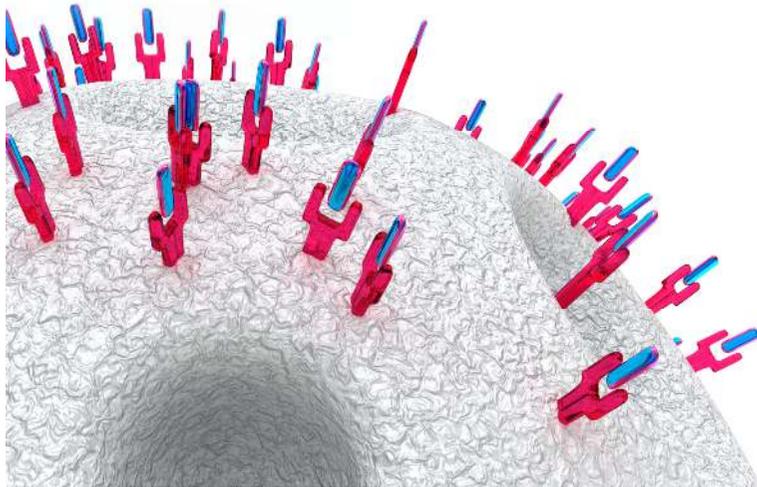


Size Exclusion Chromatography

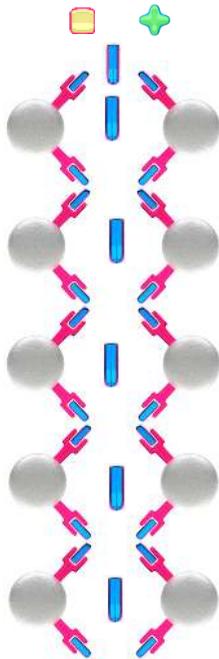


Affinity Chromatography

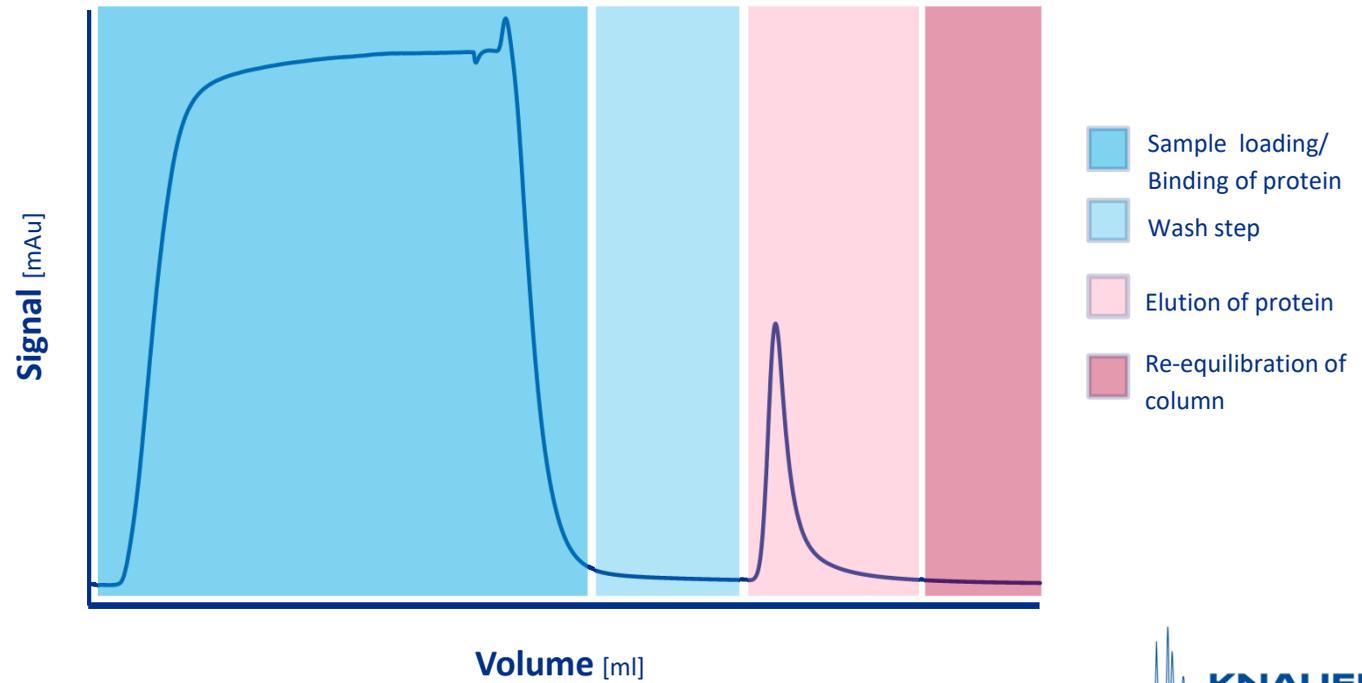
Affinity chromatography/AC separates molecules due to specific ligand binding



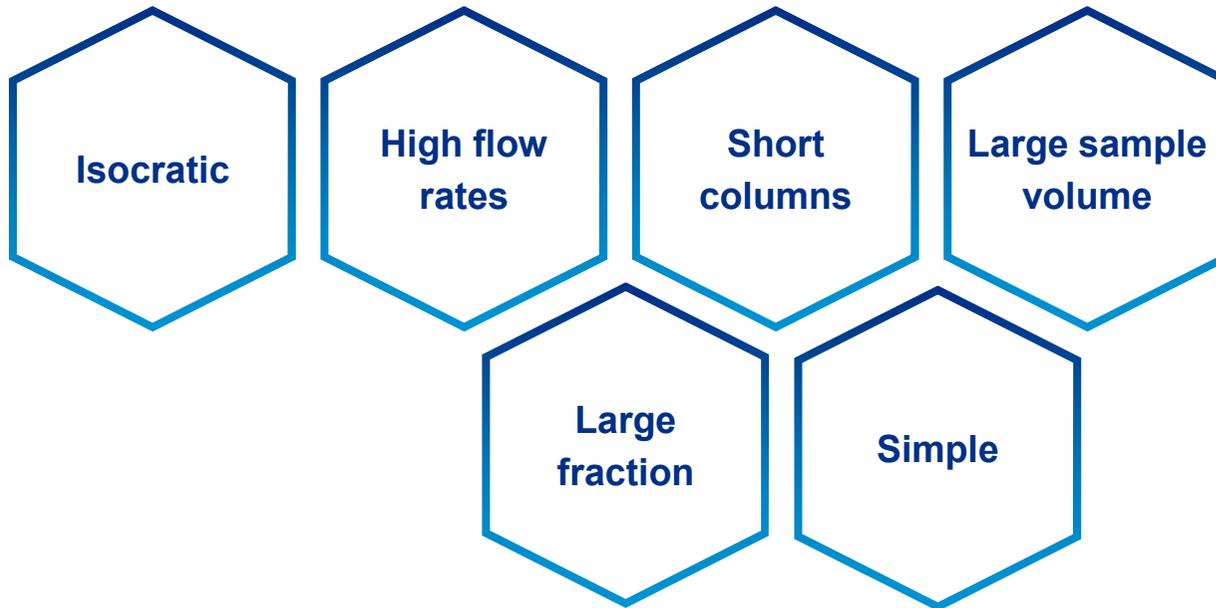
Affinity Chromatography



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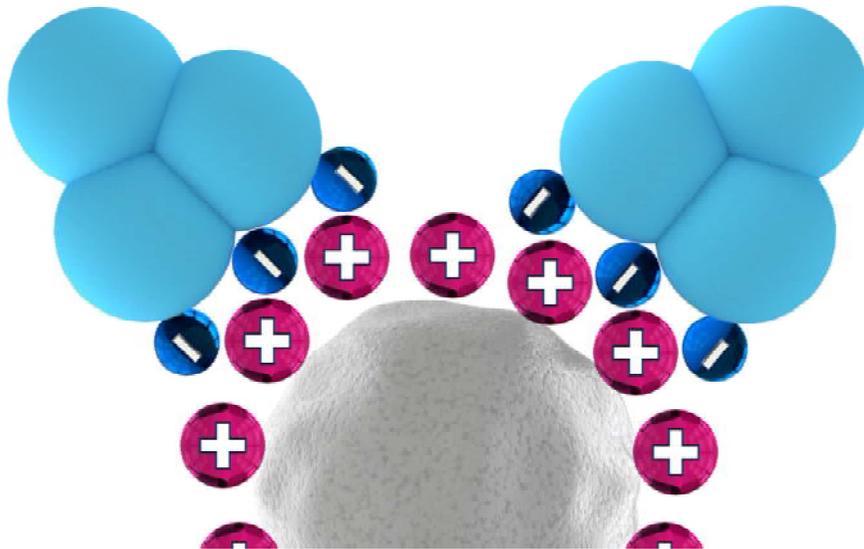


Affinity Chromatography

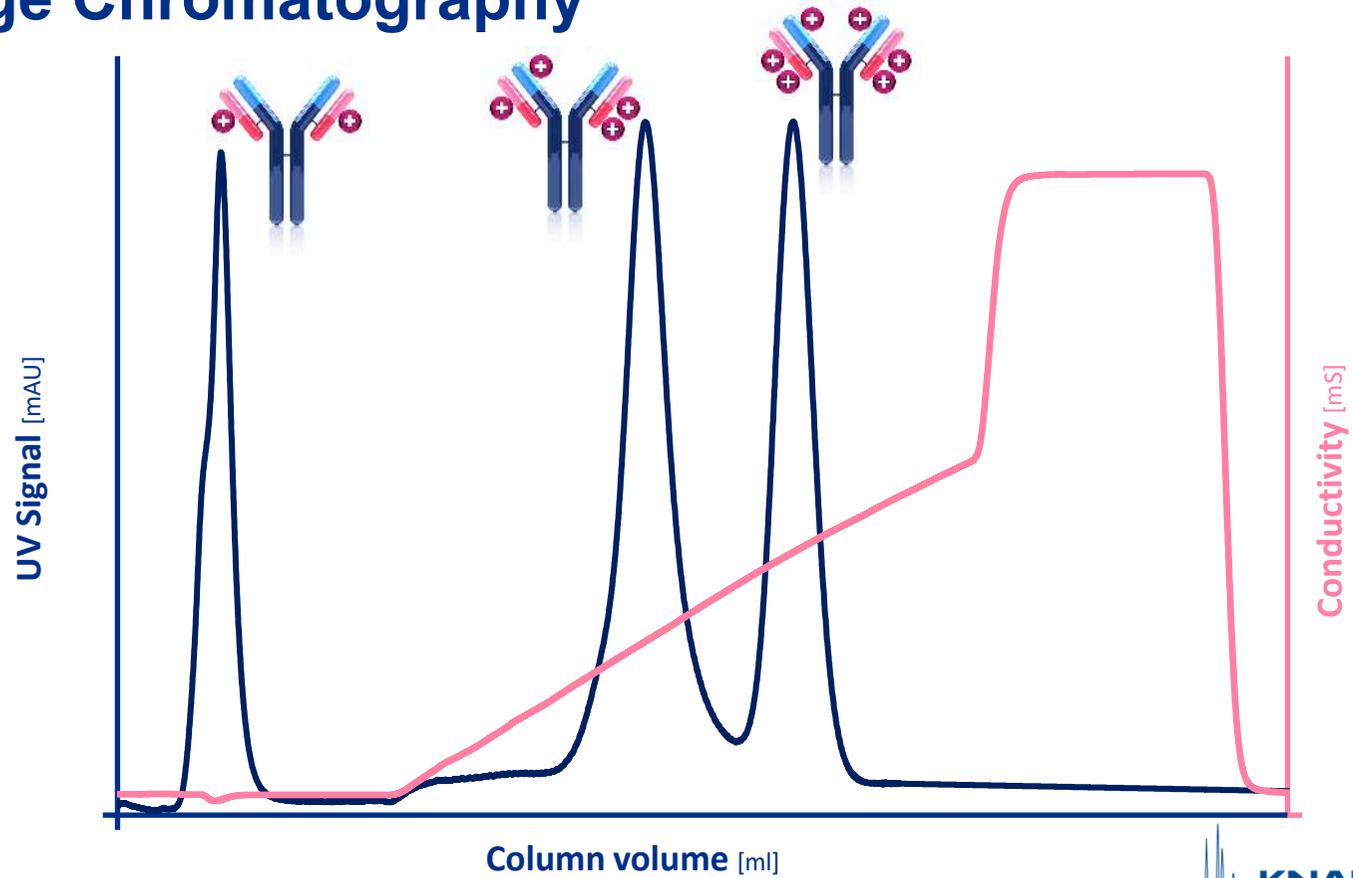
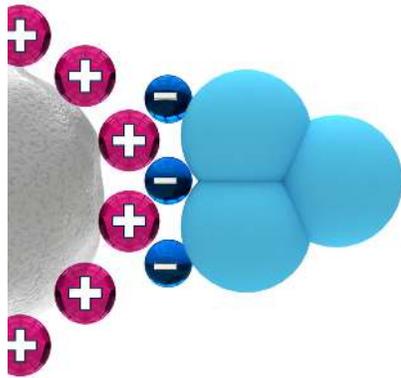


Ion Exchange Chromatography

Ion exchange chromatography/IEC separates molecules according to their charge



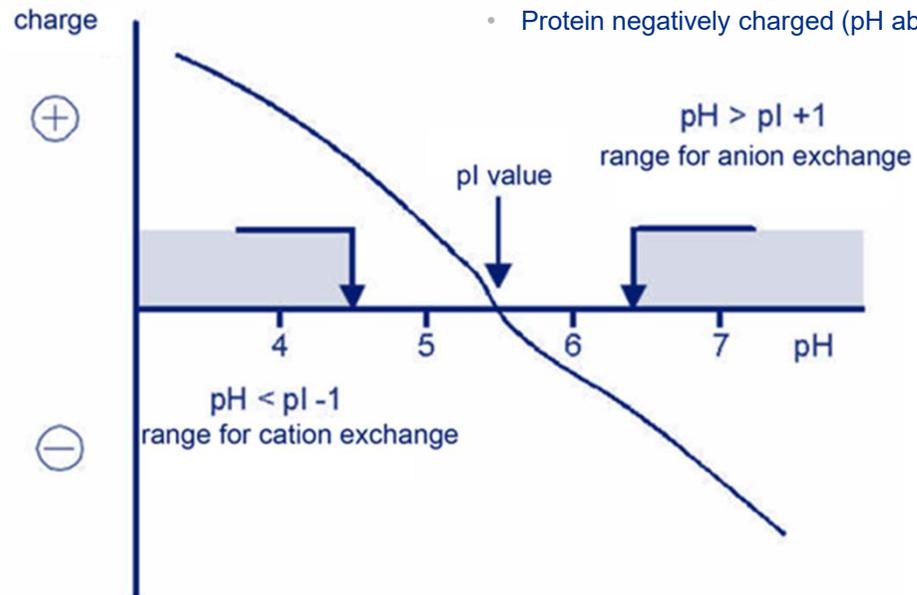
Ion Exchange Chromatography



Ion Exchange Chromatography

Anion exchange

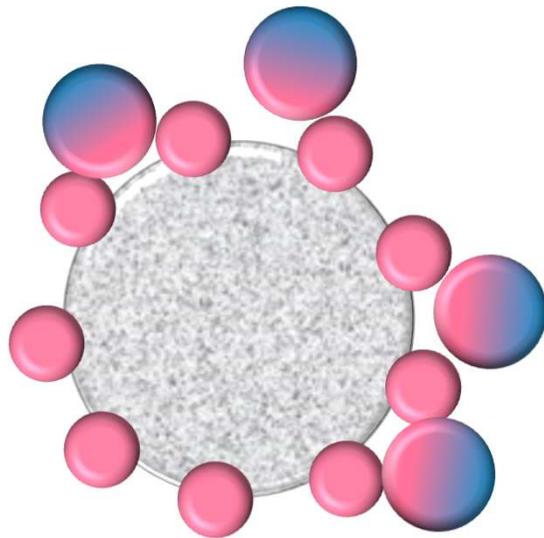
- Resin positively charged
- Protein negatively charged (pH above pI)



Cation exchange

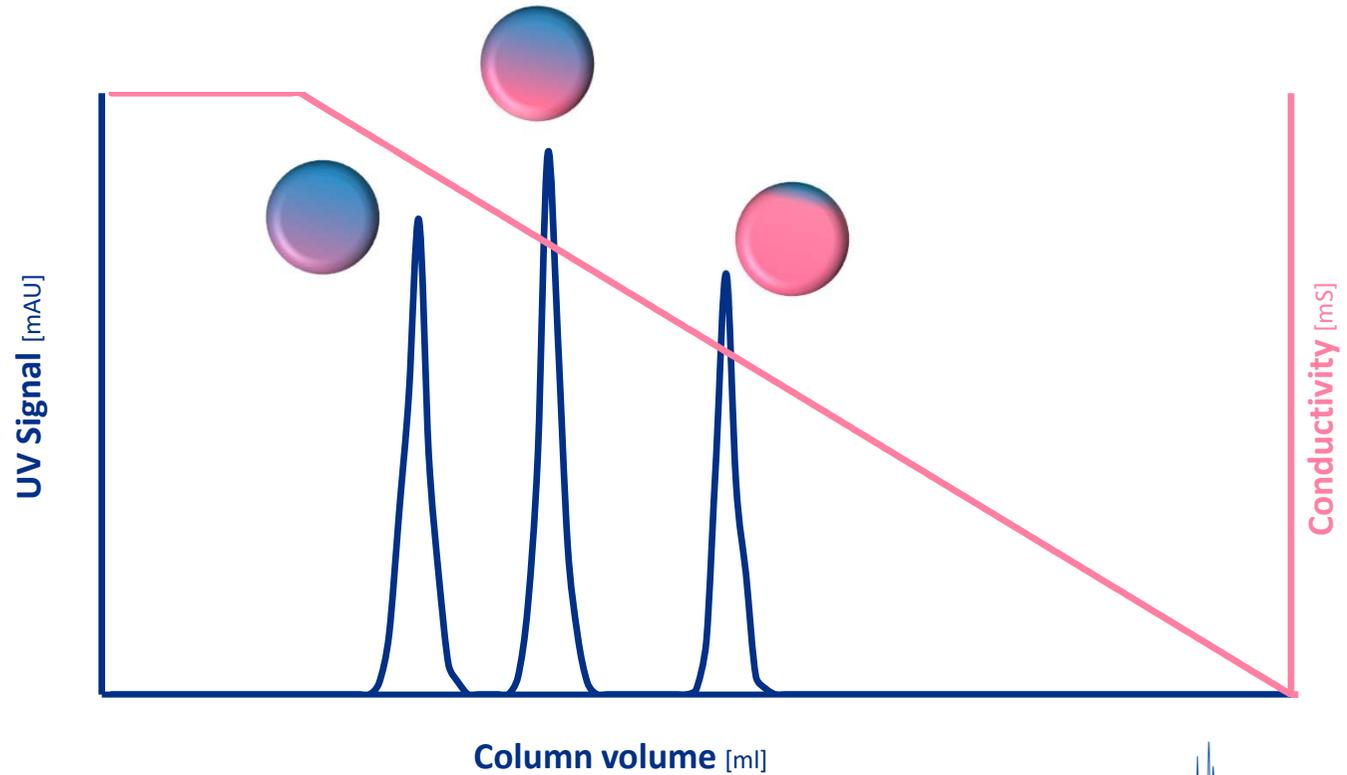
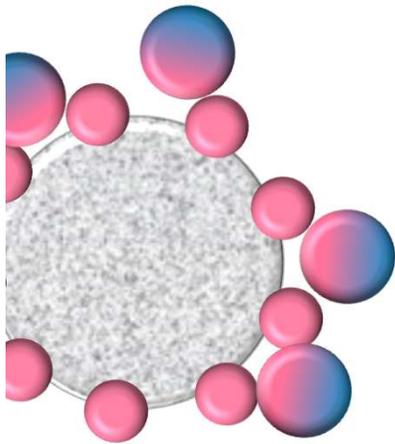
- Resin negatively charged
- Protein positively charged (pH below pI)

Hydrophobic Interaction Chromatography



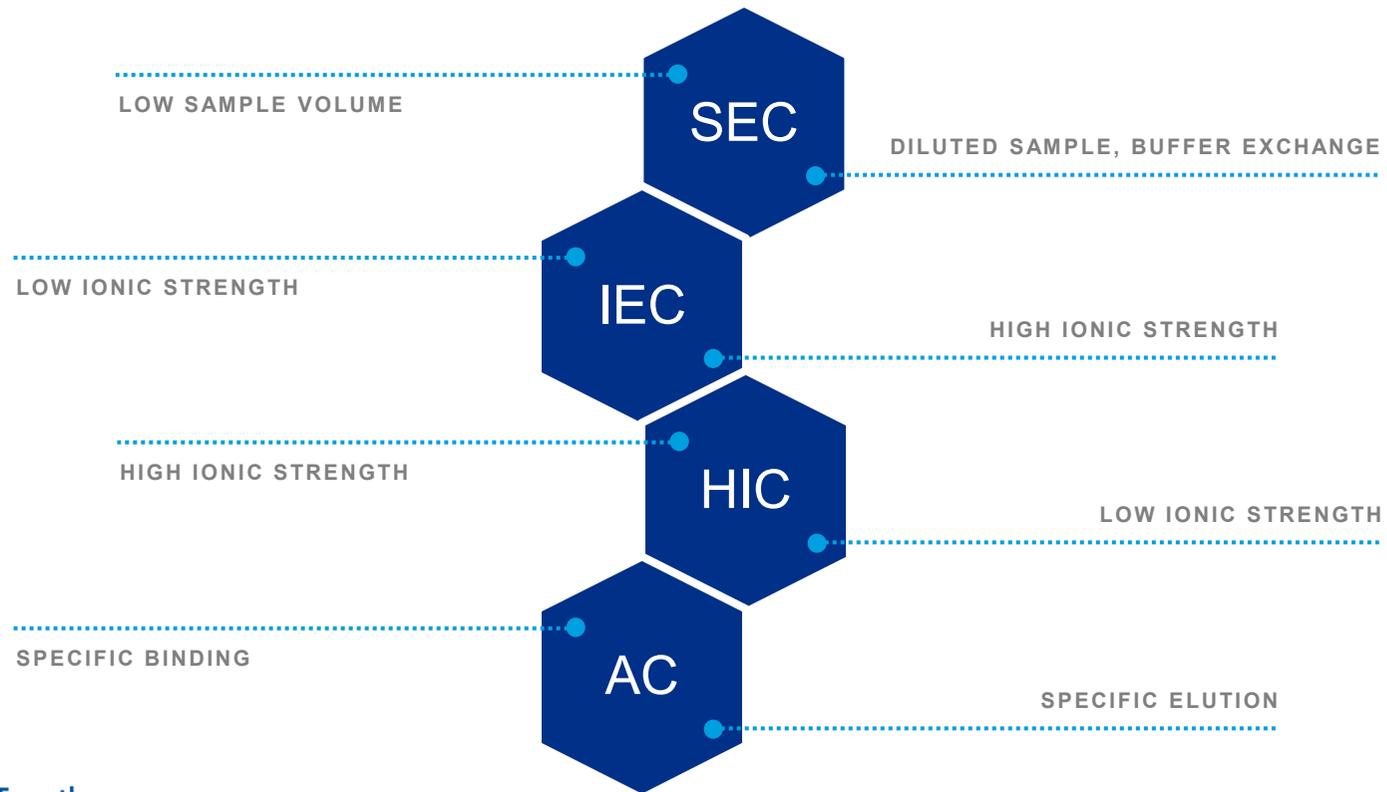
Hydrophobic Interaction chromatography/HIC separates molecules according to hydrophobicity

Hydrophobic Interaction Chromatography



Starting condition

Final condition





Purification strategies

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Protein Purification Strategy



Protein Purification Strategy



Purification from crude material

- Fast
- Concentrate
- Stabilize

Protein Purification Strategy



Removal of contamination

- Purity
- Concentrate

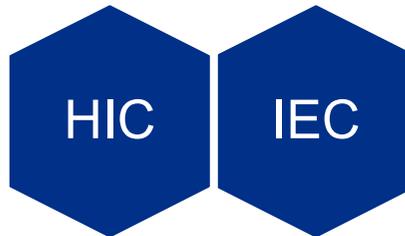
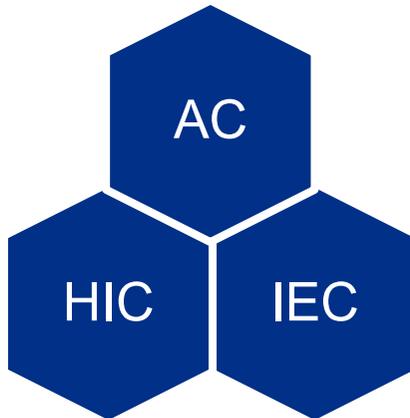
Protein Purification Strategy



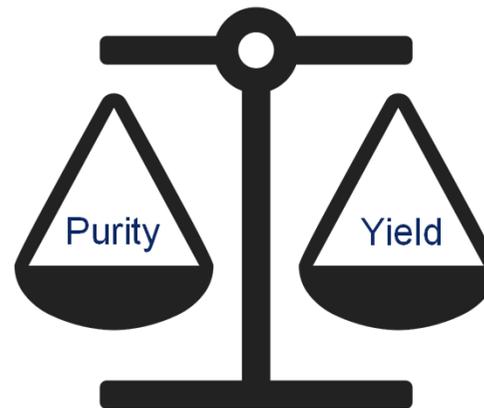
Removal of impurities

- High resolution
- Recovery
- High purity

Protein Purification Strategy



Protein Purification Strategy





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We separate molecules and
unite people.

KNAUER is an established
partner in science.

We are curious
and creative.