

Unleashing the Full Potential of Biomolecule Characterization: Purification and Analysis Strategies

The high-resolution analysis of biomolecules is of increasing importance, especially in the pharmaceutical industry, where the market dramatically changed from small molecules to protein-based drugs and antibodies. Biomolecules are chemically and structurally diverse and include proteins, peptides, carbohydrates, lipids, amino acids, and nucleic acids. Due to the inherent structural complexity and broad chemical composition of these biomolecules, multiple separation modes, column chemistries and detection techniques are required for full characterization. In addition, the need to consider biological activity of the therapeutic as well as strategies to minimize sample matrix effects are equally important for analytical scientists.

In this seminar, we discuss several aspects for the purification, analysis, and characterization of biomolecules, with a particular focus on monoclonal antibodies (mAbs) and oligonucleotides (oligos). Utilizing unique resin and membrane technology, novel approaches to mAb purification will be presented detailing how rapid and efficient purification protocols can be developed. Afterwards, an examination into methods for determining critical quality attributes of the mAb and antibody-drug conjugate (ADC) therapeutics will be highlighted, with particular attention being given to aspects of peptide mapping, intact and middle-up analysis, and glycan characterization. Finally, the story of the Oligo-6 standard used not only for column comparisons but also for monitoring HPLC analysis and purification of oligonucleotides will be shared. After attending this seminar, the engaged audience member will have new information on unique approaches in purifying and analyzing complex biomolecules.