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Raman spectroscopy as a real-time *in situ* sensor for biopharma

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Mammalian cell cultures are complex processes where cells are cultivated under highly controlled conditions using media with a very high number of components. Current effort is focused on obtaining a better understanding of mammalian cell cultures by cultivating predominantly CHO cells for therapeutic protein production. To ensure a healthy progression of the cell culture, it is important to understand and monitor the stages of the biologic manufacturing. In order to build quality into a process a primary step is to analyze the process, understand what the critical quality attributes are and monitor or rather control those factors. Consequently, there is a significant interest and value in techniques that provide instantaneous response for monitoring and analyzing biopharmaceutical processes. Molecular techniques such as Raman spectroscopy are widely used for PAT applications, because they provide *in situ* information in real-time. Raman spectroscopy is a method by which multiple bioprocess assays can be measured *in situ* within the bioreactor or fermentor environment. Raman is a fundamental vibrational spectroscopic technique that provides chemical and physical information that can be used to generate multi-component qualitative and quantitative predictive models. Real-time measurements within Biopharma are achieved for Glucose, Glutamine, Glutamate, Lactate, Ammonium, Viable Cell Density, Total Cell Density, Osmolality, Monoclonal Antibodies and Viability.

Biography

Alexander Pitters is a Life-Science Engineer (MSc from University of Technology and Economics Berlin). He has worked at Max Planck Institute for Molecular Genetics in Berlin as a Biologic-Technical Assistant, at Procter & Gamble Brussels Innovation Centre as a Process Development Engineer and at Bayer Technology Services in Berkeley as a PAT-Biologics Engineer. He has joined Kaiser as an Applications Scientist to analyze data, create chemometric models and develop business within the pharmaceutical industry.

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