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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. rnrnIn 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.rnrnRaman spectroscopy is a method by which multiple bioprocess assays can be measured in situ within the bioreactor or fermenter 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. rnrnReal-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 (M.Sc. - University of Technology and Economics Berlin), 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 joined Kaiser as an Applications Scientist to analyze data, create chemometric models and develop business within the pharmaceutical industry.

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