

A step ahead in on-line monitoring of bio-pharmaceutical production: Timegated Raman Spectroscopic Approach

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Currently, the key quality parameters, affecting on the state of cell growth in bio-pharmaceutical processes, are measured mainly daily or twice a day through the manual sampling followed by the laboratory analysis. On-line monitoring would offer more frequent information about the advancement of cell culture with the potential to increase the production yields and the product quality.

The current challenge in the online monitoring during the bio-pharmaceutical protein production is to get specific information about the cell growth and media compositions. Raman spectroscopy has shown very promising results for this. However, the traditional continuous-wave (CW) Raman spectrometers often suffer from the fluorescence signal decreasing the sensitivity of the measurement or in the worst cases, it prevents totally the detection of weak Raman signal.

The new timegated Raman approach offers the solution to many current bioprocess monitoring challenges. Through the timegating measurement feature, we can reduce or in the best cases totally overcome the fluorescence issues and achieve a higher measurement sensitivity and performance also in the very dilute cultures.

This presentation will include a more detailed description of this timegated Raman measurement approach, real measurement examples in lab and an outlook for the future implementation steps towards the on-line monitoring of cell cultures.