

## **MONITOR AND CONTROL OF MULTIPLE BIOREACTOR PARAMETERS USING IN SITU RAMAN SPECTROSCOPY**

Mark Czeterko, Regeneron Pharmaceuticals Inc., USA  
mark.czeterko@regeneron.com

In situ Raman spectroscopy allows bioreactor parameters to be automatically measured online, multiple times per hour, while eliminating the need for sample removal. Raman spectra are used to develop predictive models for real-time measure of cell culture parameters. These models have been employed in development for superior process control of upstream bioprocesses. A case study of our approach will be discussed.