

Online Monitoring of Cell Debris Flocculation

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The flocculation of cell debris in a bacterial vaccine fermentation provides the benefit of enhanced separation of waste solids from the product-rich liquor during centrifugation.

In this experiment, FBRM[®] was used to monitor batch response to flocculation process parameters such as mixing and flocculent.

FBRM[®] detected an "optimal" flocculent charge that corresponded well to offline assay observations and qualitative visual evaluation. Flocculent charge was shown to be dependent on the selected experimental parameters. FBRM[®] measurements also characterized the flocculation endpoint as a rapid shift in the particle size distribution (Figure 1), offering an objective description of the visual observation. FBRM[®] was also used to facilitate development of the process step across several scales of observation (Figure 2).

FBRM[®] was concluded to be a quantitative online monitoring tool that played an instrumental role in this process optimization.

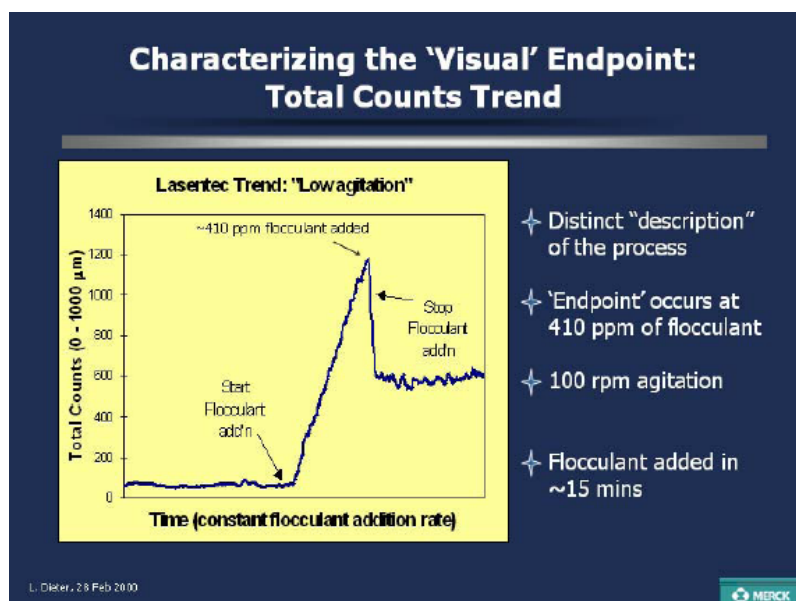
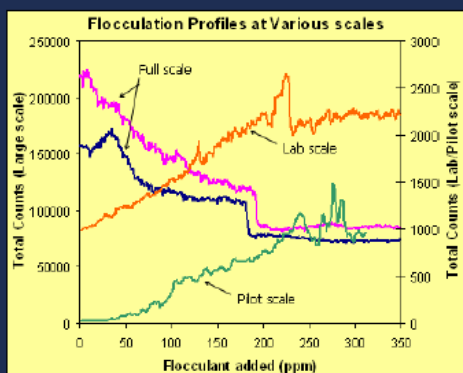


Figure 1.
 FBRM[®] data confirms visual observation of the process endpoint

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Scalability: The use of the FBRM at multiple scales



- ✦ At full scale, endpoint is still detectable
- ✦ Software setup similar at all scales
- ✦ Probe locations vary between scales (same for lab and full scales)

Figure 2.
FBRM® successfully detects flocculation endpoint at all scales

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