

A Novel Method for Monitoring Monoclonal Antibody Production during Cell Culture

Derek Smith

Abstract

We describe a new format for surface-based fluoroimmunoassays that allows detection of biomolecule interactions without separation steps. The bioactive layer is immobilized on the surface of a glass substrate covered with silver islands that provide optical amplification of the distinctive fluorescence signal from bound probes when compared to unbound probes. The technique is phase-modulation fluorometry that allows sensitive detection of bound probes with a very short lifetime in the presence of excess free probes in solution. The new method is applied to assay monoclonal antibody production during cell culture. Excellent agreement was found on IgG3 concentrations measured with the new method as compared to those obtained via ELISA analysis using hybridoma cell culture samples. It is forecast that real time monitoring of bioprocessing will be possible with the described technology.