

Application of the focused beam reflectance measurement method to the characterization of plant cells in suspension culture

BIOT 41

Paul T. Jeffers¹, Sara Raposo², Maria Emilia Lima-Costa², Patricia Kieran¹, and Brian Glennon¹. (1) Department of Chemical Engineering, University College Dublin, Room 125a, Engineering Building, Belfield, Dublin, D4, Ireland, (2) Faculdade de Engenharia de Recursos Naturais, Universidade do Algarve, Faro, Portugal

The ability to determine biomass levels and organism morphological characteristics is of importance in many bioprocesses. This study concerns the application of the Lasentec® focused beam reflectance measurement method (FBRM) to the characterization of two morphologically dissimilar plant systems *Morinda citrifolia* and *Centaurea calcitrapa*. *M. citrifolia* exists in suspension as elongated cells/chains. *C. calcitrapa* exists as an aggregated system. FBRM measurements were performed using 160ml of cell suspension agitated at 200 rpm. Image analysis was used to independently track morphology. The results suggest that this technique may be successfully used to monitor variations in biomass levels up to 400g/l fresh weight. Results are system specific and calibration curves must be developed for each cell line. The data also revealed a strong correlation between FBRM and image analysis measurements. This technique has strong potential for on-line monitoring and optimization of fermentation systems for metabolite production and downstream processing.