

Prediction technique of oil concentration in algae for  
on-line monitoring using chemometrics and Raman spectroscopy

오세균, 유성진, 이종민\*  
서울대학교  
(jongmin@snu.ac.kr\*)

In biological processes, it is not simple to analyze compositions of bio-product. These processes take a long time (30~60 mins) and much effort is required. Raman spectroscopy is suitable for on-line monitoring of bioprocess with proper algorithms due to its low sensitivity to aqueous solution and Raman wavelengths can be effectively transferred by optical fiber compared with Fourier transform infrared (FT-IR), visible or near IR. This work proposes a soft-sensor framework based on Raman spectra and chemometrics. Spectral noise and background effect are removed by Savitzky-Golay smoothing filter and Rolling-Circle Filter (RCF), respectively. Then Partial Least Square (PLS) is used to predict to oil concentration based on latent variables.