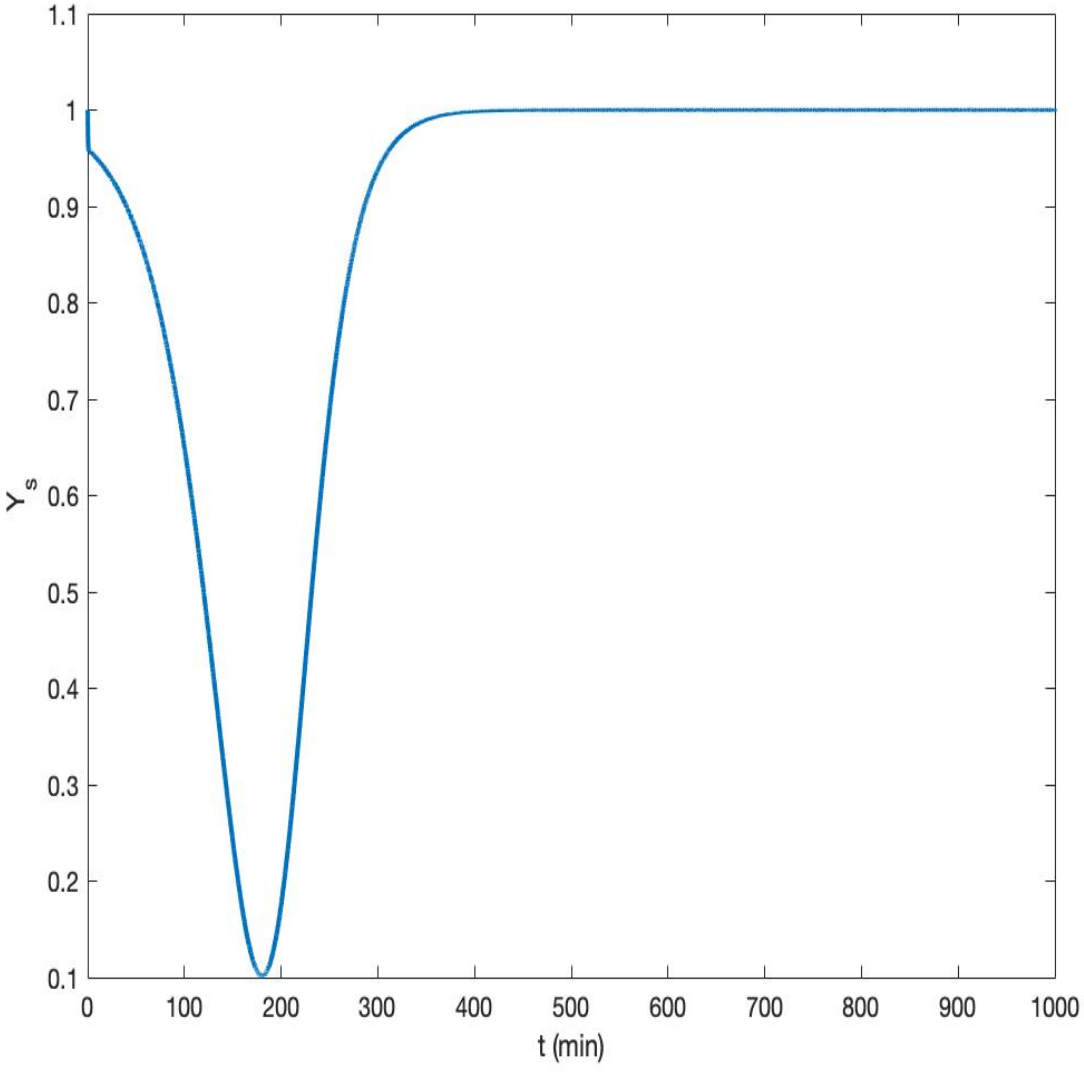
TOLUWALASHE OMOTUNDE
CHE 525 INDIVIDUAL PROJECT
DR. GREGORY REEVES
6TH OF MAY 2019



From the above plot, it is seen that Y_S drops from 1 to 0.1 and it is necessary to keep Y_S as close to 0.5 as possible. This is because a very high value of Y_S leads to cell poisoning and a low value is also detrimental to the cells. It can be inferred that Y_S approaches a minimum of 0.1 at about 180 minutes after which it goes back to its

maximum value. Y_S drops below 0.5 for the first time at about 120 minutes so using Matlab, a PI feedback control system is simulated to maintain the dissolved oxygen content in the fermentor at 50% of the air-based oxygen saturation concentration. The parameters for the feedback controllers are $K_c = 20000 SLPM \; and \; \tau_I = 1.6667 \; minutes$.