

## CE 329, Fall 2015

### Assignment 32

Consider an isothermal tubular packed bed reactor with axial dispersion where the Danckwerts boundary conditions apply. The irreversible reaction  $A \rightarrow B$  takes place with a forward rate coefficient equal to  $1.2 \times 10^{-2} \text{ L mol}^{-1} \text{ s}^{-1}$ . The feed contains only A at a concentration of 1M. The axial Peclet number, based on the packing diameter and the superficial velocity, is equal to 2 and the inlet superficial velocity is 0.01 m/s. The reactor contains a fixed bed of 0.004 m diameter catalyst particles. Compare a plot of the conversion versus length to that for a plug flow reactor for reactor lengths from zero to fifty times the particle diameter. Note: This problem is exactly the same as Example 33.1 except for the reaction kinetics.