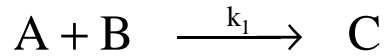


**CE 559: Water Quality Modeling**  
**Homework #2**

Solve for the concentrations of species A, B, and C with time using (a) Euler's Method and (b) the analytical solution. For (a): use a step size of 0.001 min. Print at every minute to 20 min. For (b): Solve at each minute for  $t = 0$  to 20 min.

Initial Conditions:  $A = 0.0105 \text{ mM}$ ,  $B = 0.0075 \text{ mM}$ ,  $C = 0$ .  
Constants:  $k_1 = 4 \times 10^2 \text{ M}^{-1} \text{ sec}^{-1}$



Graph the analytical solution as a line, and plot the numerical solution as circles (every minute) in units of  $\mu\text{M}$ . (Hint: Convert  $k_1$  to units of  $\text{M}^{-1} \text{ min}^{-1}$  and perform all calculations in minutes; and perform all calculates in Molar units, and then convert to  $\mu\text{M}$  on the spreadsheet to graph.)