**A First Course on Kinetics and Reaction Engineering**

**How To Express \( C_A \) (or \( P_A \)) in Terms of \( n_B \) (or \( \dot{n}_B \)) in a Single Reaction System**

1. Write an expression for \( n_B \) (or \( \dot{n}_B \)) in terms of the extent of reaction, and solve it to get an expression for the extent of reaction.
2. Write the defining equation for \( C_A \) (or \( P_A \)) in terms of the moles (or molar flow rates) of A and, if relevant, the total moles (or molar flow rate).
3. Each place moles (or molar flow rate) appears in the equation from step 2, express them in terms of the extent of reaction.
4. Substitute the expression from step 1 for each occurrence of the extent of reaction in the equation resulting from step 3.

* It is very common to need to do this when analyzing kinetics data from a batch or plug flow reactor; you will need to do this when solving problems in Part II of this course.