

## **Alternative Activity 1.1**

### **Description**

In this activity the students will draw upon their own life experiences to illustrate, by analogy, the primary focus of kinetics, thermodynamics and reaction engineering and the inter-relationship between them.

### **Objective**

The objective is to help students appreciate how kinetics, thermodynamics and reaction engineering all complement and depend upon each other.

### **Preparation**

1. No materials other than the slides and this lesson plan are needed.

### **Lesson Plan**

1. Using the slide provided (modified as you deem appropriate), have the students, as a class, generate a list of the key focus of the three fields and the relationships between them. This can be done by having them call them out as you write them on the board, having them raise hands and volunteer and then (after comment or refinement by you or the class) write them on the board, etc.
2. Once the main points have been listed, give the students 3 to 5 minutes to jot down as many analogy scenarios as they can think of. Remind them of the example from the reading involving cooking brats, but ask them to try to think of activities other than cooking, lest they essentially duplicate that example.
3. When they have identified possible scenarios, form them into groups of 2 to 4 with the assignment of selecting one of the scenarios from those generated by their group and generating a bullet list of analogies between that scenario and kinetics, thermodynamics and reaction engineering.
4. After 10 minutes or so, call on the groups and ask them to identify the scenario that they selected.
5. Choose one or two and ask them to read off their bullet list. You and the class can comment, expand, etc.

### **Variations**

The activity could be done entirely as individuals or entirely in groups. One advantage of starting individually is that they may see the advantages of group work. Indeed, you might choose to emphasize it by asking whether they think their final answer is better or worse than if they had done it alone. You can also point out how the individual brainstorming could have been done as a group, but some people might not have volunteered their ideas if it had (and you can ask them why, what they might do about that, etc.)

### **Tips and Suggestions**

The students might struggle during the individual brainstorming. Many will want to come up with some variation on cooking. You might have a few examples to throw out if they are struggling. A few possibilities: growing a garden, mowing the lawn, taking a trip, climbing a mountain....