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Day 24 Apr 21 Chemical reactions, bonding, and energy

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### 24.0.A Daily Outline

Christopher F. Bauer

*University of New Hampshire*, [chris.bauer@unh.edu](mailto:chris.bauer@unh.edu)

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Purpose:

- Establishing the relationship between heat and matter in chemical reactions
- Creating a model for how heat is related to differences in bond energies of reactants/products
- 

Board

(Just put nametags out without saying make them. See if they do.)

DON'T FORGET TO CLAPMaterials

Name tags (4 per table)  
Post posters from Ben's day

Returns

- Recorder reports from previous days given to group manager at that time. Manager should show returned report to rest of group in case of comments.
- 

Distributions

- Take home exam (at end of class)

Starting Comments 1 minute max

- Select someone to clap
- Five tasks. As you complete one, I'll deliver the next.
- Hope to leave some time for consultation regarding poster topics

Assignment

- Read posted article about Alfred Nobel (bring?)
- Read posted short story about The Last Question (bring?)
- Bring some notes about each

Reisert	Price	Joncas	Addison
Sneeden	Bouchard	Colaw	Pettis
Sidney	Cappetta	Graves	Koester

Wikiewicz	Frost	King	Dwyer	Price
Zukowki	Tamposi	Arsenault	Butler	

Intiate set of sequential tasks

The tasks are a POGIL structure that walks groups through the relationship of heat to chemical reactions.

Each task is presented only after the previous task is completed, otherwise it seems like there is a lot to do. Better to reveal each task, one at a time.

Task 1: Sets up groups, including a new role “ambassador” whereby groups can compare each other’s work

What is a chemical reaction?

A chemical reaction is when you mix two or more substances together and the properties change.

Task 2: Relates the behaviors they saw last week to a simple energy diagram of the change in energy on a reaction progress axis.

Watch their answers.

Circulate to talk about “system” and “surroundings” relative to Q5 and Q6

Task 3: Links the quantity of heat to the quantity of the materials used for the reaction

Heat is proportional to chemical quantities.

Also introduces the idea of thinking about this as a potential energy change.

At 3.3, critical to ask the question for an endothermic reaction:

If energy is absorbed, does the system temperature increase?

Or is it like latent energy: if you have ice, absorption of energy does not cause a T increase.

Task 4: Working with models to consider bond breaking and forming.

Linking bond breaking and forming with energy.

MONITOR: for the “energy in” when breaking apart hands

MONITOR: for the “energy out” when the steel ball falls

Check in: at 4.11 to hear their sentences summarizing energy/bond relationship

Check in: at 4.12 to make sure they know how to use bond energy table

Have computer handy to display the reactions for people to point to.

During the presentations, note questions. When done, let you chat to see whether you have additional questions about what we just discussed. This should bring out the “problem” with the ATP reaction outcome.

Task 5 Why do things explode?

Provide to each group. Let them talk. Check in with their responses.

Let them ask questions.