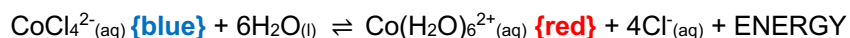


## AP LAB 071: Le Châtelier's Principle Simulation I

Use the following URL to answer the questions that follow;



<https://bit.ly/2pK7cmU>

**Experiment 1:** Click on the cobalt system.

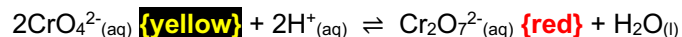


You will be shown a chemical equilibrium reaction at the top of the page and a photograph of a purple solution surrounded by icons. Clicking on each icon in turn will show a pair of photographs. The first one is a photograph of the solution as it was BEFORE action indicated by the click, the second photograph is the change in solution as a RESULT of the action indicated by the click. Answer the questions below.

- (a) Why is the solution purple at the beginning?
- (b) For each action, consider the changes that are observed and explain why they took place.

|   | Observation (change) | Explanation |
|---|----------------------|-------------|
| <br><b>Heating</b>  |                      |             |
| <br><b>Cooling</b> |                      |             |
| <b>Adding KCl solution</b>  |                      |             |
| <b>Adding water</b>   |                      |             |
| <b>Adding AgNO<sub>3</sub> solution</b>   |                      |             |

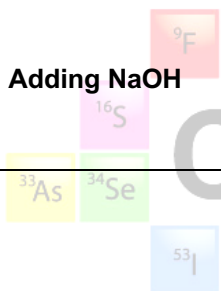
**Experiment 2:** Click on the chromate system.



You will be shown a chemical equilibrium reaction at the top of the page and a photograph of an orange solution surrounded by icons. Clicking on each icon in turn will show a pair of photographs. The first one is a photograph of the solution as it was BEFORE action indicated by the click, the second photograph is the change in solution as a RESULT of the action indicated by the click. Answer the questions below.

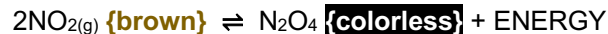
- Why is the solution orange at the beginning?
- For each action, consider the changes that are observed and explain why they took place.

|             | Observation (change) | Explanation |
|-------------|----------------------|-------------|
| Adding HCl  |                      |             |
| Adding NaOH |                      |             |



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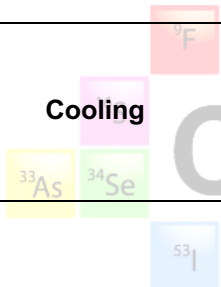
**Experiment 3:** Click on the nitrogen dioxide system.



You will be shown a chemical equilibrium reaction at the top of the page and a photograph of a pale brown gas surrounded by icons. Clicking on each icon in turn will show a pair of photographs. The first one is a photograph of the solution as it was BEFORE action indicated by the click, the second photograph is the change in solution as a RESULT of the action indicated by the click. Answer the questions below.

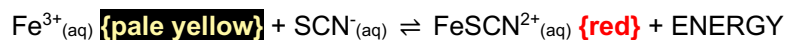
- (a) Why is the gas pale brown at the beginning?
- (b) For each action, consider the changes that are observed and explain why they took place.

|         | Observation (change) | Explanation |
|---------|----------------------|-------------|
| Heating |                      |             |
| Cooling |                      |             |






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**Experiment 4:** Click on the iron thiocyanate system.



You will be shown a chemical equilibrium reaction at the top of the page and a photograph of a pale orange solution surrounded by icons. Clicking on each icon in turn will show a pair of photographs. The first one is a photograph of the solution as it was BEFORE action indicated by the click, the second photograph is the change in solution as a RESULT of the action indicated by the click. Answer the questions below.

- (a) Why is the solution pale orange at the beginning?
- (b) For each action, consider the changes that are observed and explain why they took place.

|   | Observation (change) | Explanation |
|---|----------------------|-------------|
| <p><b>Heating</b></p>   |                      |             |
| <p><b>Adding KSCN solution</b></p>                           |                      |             |
| <p><b>Adding Na<sub>2</sub>HPO<sub>4</sub> solution</b></p>  |                      |             |
| <p><b>Adding Fe(NO<sub>3</sub>)<sub>3</sub> solution</b></p>  |                      |             |