

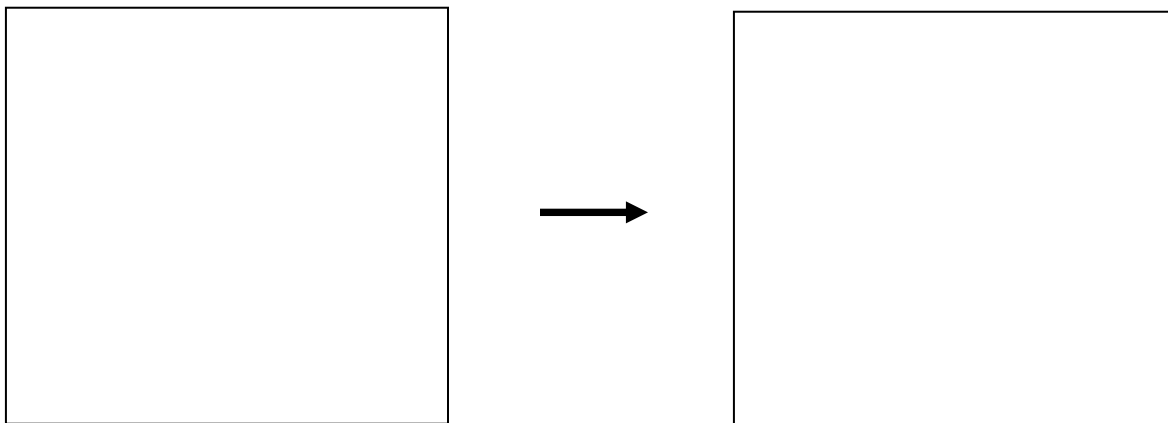
## Representing Reactions Worksheet

1. When an iron nail is placed in an aqueous solution of copper (II) chloride an orange solid appears around the nail, there is a change in color from blue to green and the nails lose mass.

a) In the spaces below do a before and after drawing at the particle level of the reaction

**Before**

**After**



b) Explain in your own words how the reaction took place and how your representation accounts for the visual observations described above. Make sure to mention the role of each atom participating in the reaction

c) How would the amount of orange solid change if more iron nails were initially placed in the copper (II) chloride solution?

d) During our class discussion it was concluded that the either iron (II) or iron (III) could be a product of the reaction. Use your data from the experiment to quantitatively determine which of the two ions was present after the reaction

e) Write the chemical equation which represents the reaction discussed above

2. When a piece of magnesium metal is dropped in an aqueous solution of hydrochloric acid, bubbles form around the magnesium metal and the metal disappears from view.

a) In the spaces below do a before and after drawing at the particle level of the reaction

**Before**



**After**



b) Explain how the reaction took place and how your representation accounts for the visual observations listed above. Address the role of all species involved in the reaction.

c) Write the chemical equation which represents the reaction discussed above

d) How does this reaction compare to the reaction between the iron nail and the  $\text{CuCl}_2(\text{aq})$ ?

e) If a piece of copper metal is placed in the solution of HCl no change is observed but if an iron nail is placed in the same solution bubbles will be observed. Explain these observations.