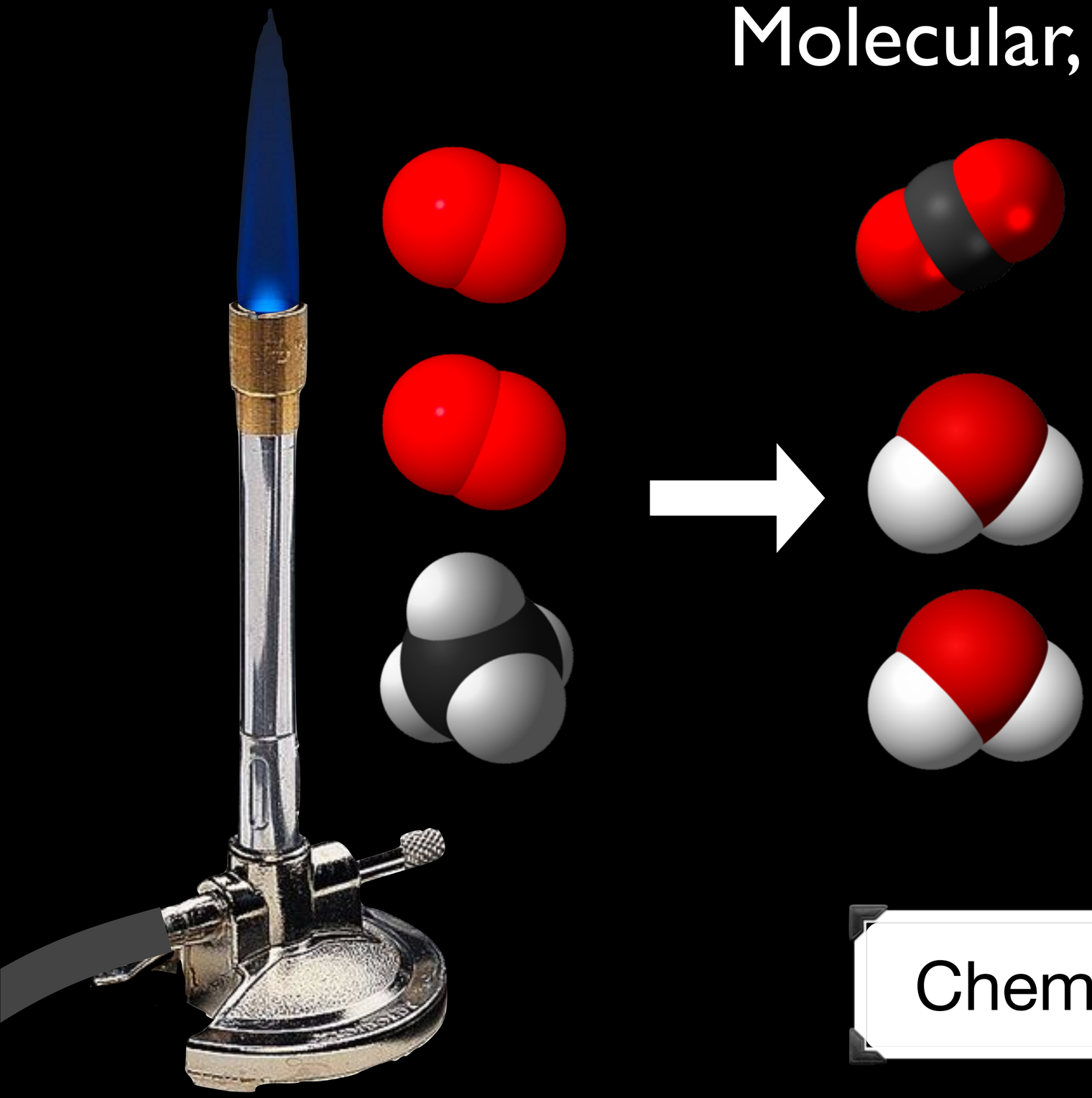
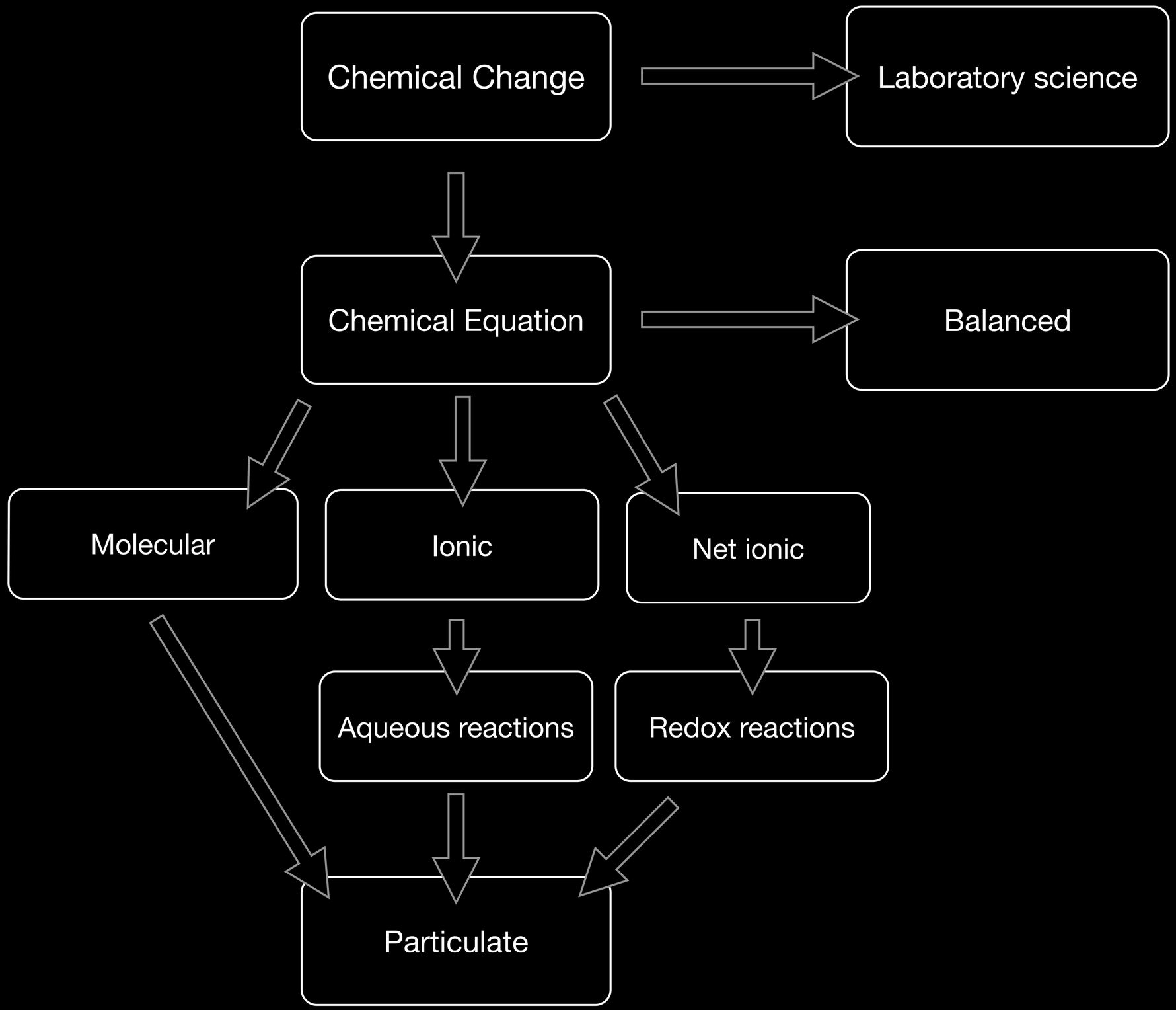
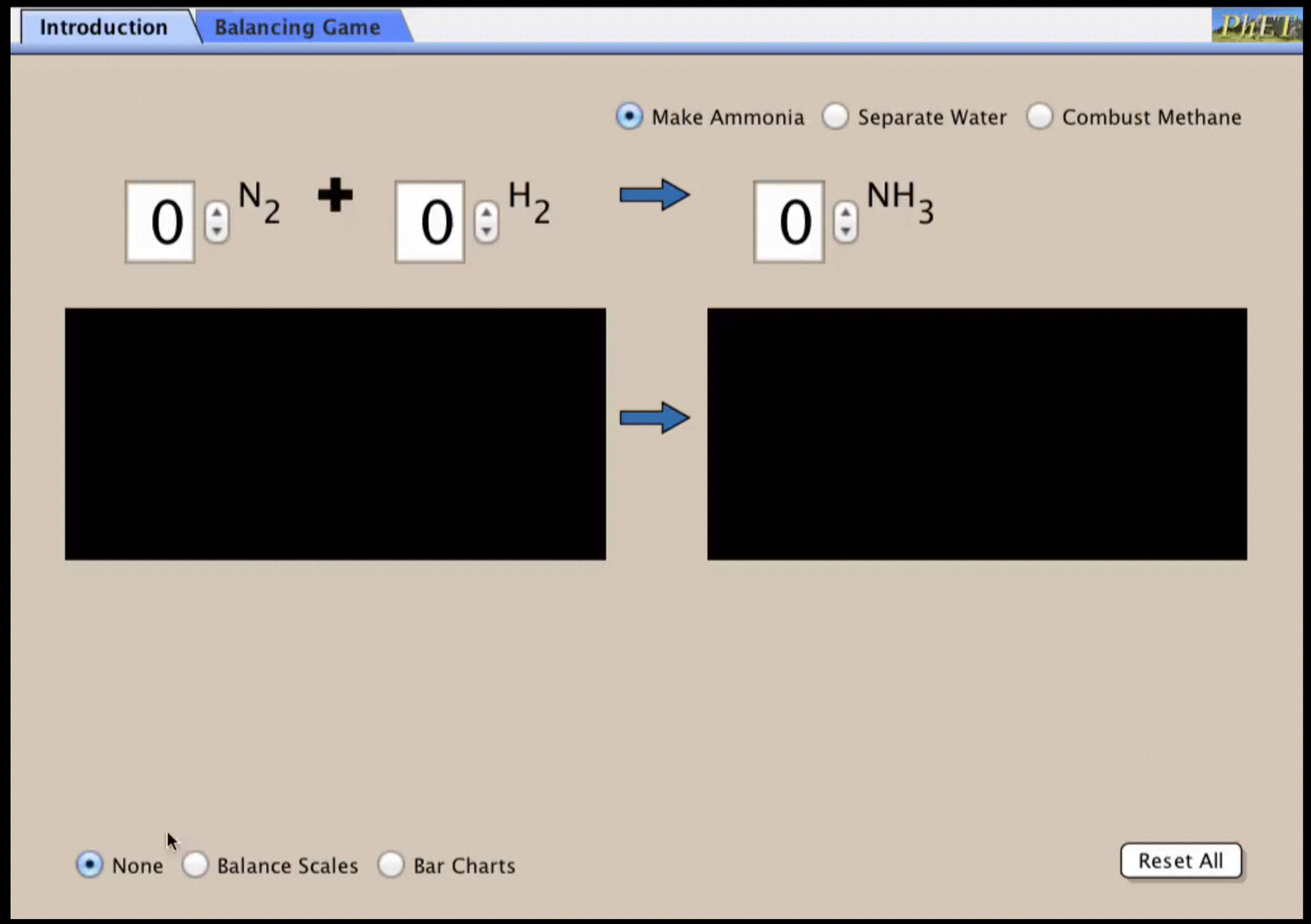
Molecular, Ionic and Net Ionic Equations



Chemistry Essentials - 027



Balanced Equations



http://phet.colorado.edu/

Chemical Equation

Methane combusts in the presence of oxygen creating carbon dioxide and water vapor.

$$CH_4(g) + 2\,O_2(g) \longrightarrow CO_2(g) + 2\,H_2O(g)$$

Molecular Equation

When a solution of lead nitrate is added to a solution of potassium iodide it produces a yellow precipitate of lead iodide that settles to the bottom of the beaker.

When a solution of lead nitrate is added to a solution of potassium iodide it produces a yellow precicipate of lead iodide that settles to the bottom of the beaker.

$$Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(s) + 2KNO_3(aq)$$

Molecular Equation

$$Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(s) + 2KNO_3(aq)$$

$$^{2+}Pb(NO_3)_2^{-}(aq) + 2KI(aq) \longrightarrow PbI_2(s) + 2KNO_3(aq)$$

$$Pb^{2+}(aq) + 2(NO_3)^-(aq) + 2K^+(aq) + 2I^-(aq) \longrightarrow$$

$$PbI_2(s) + 2K^+(aq) + 2(NO_3)^-(aq)$$

Ionic Equation

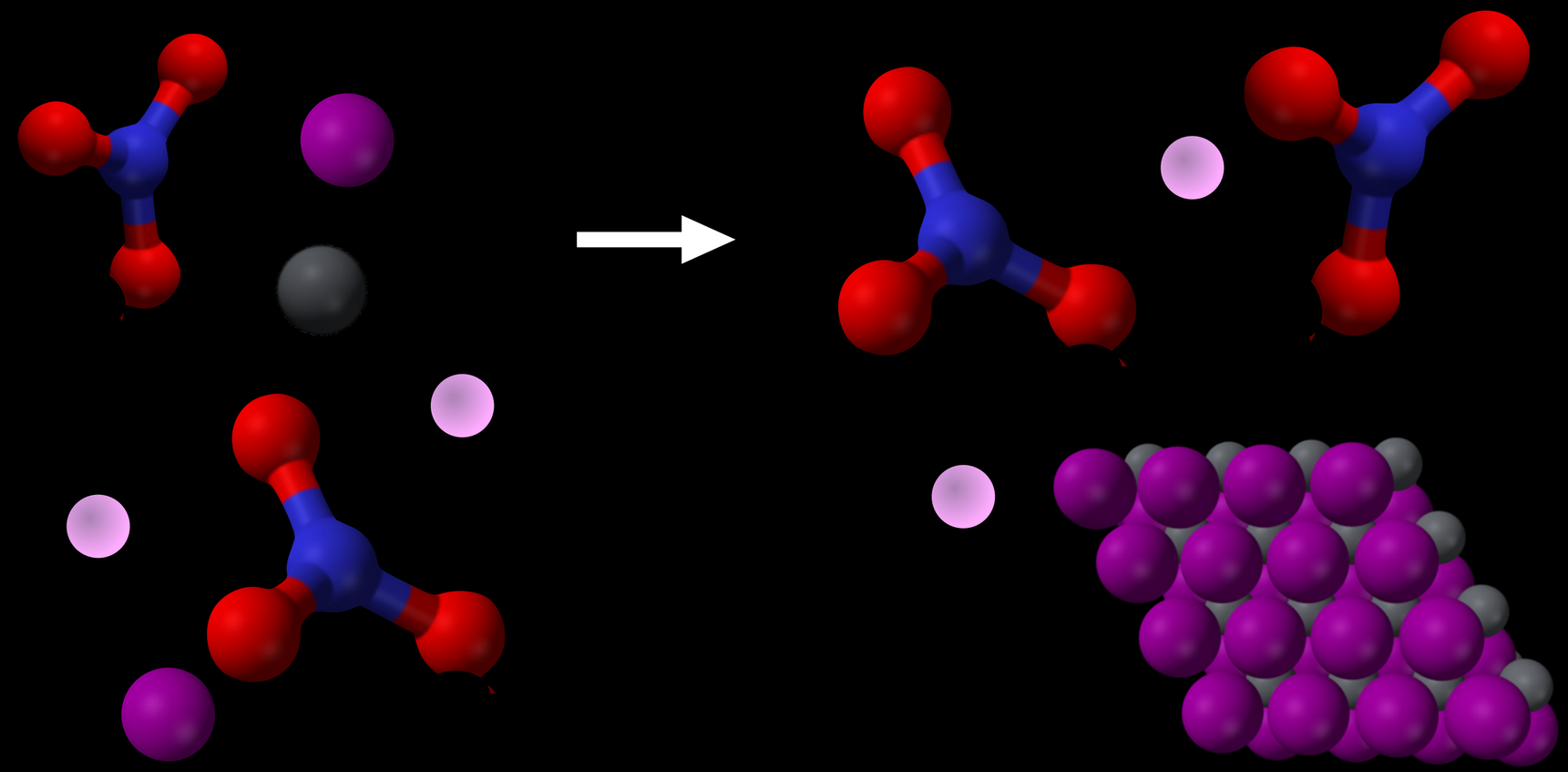
$$Pb^{2+}(aq) + 2(NO_3)^-(aq) + 2K^+(aq) + 2I^-(aq) \longrightarrow PbI_2(s) + 2K^+(aq) + 2(NO_3)^-(aq)$$

$$Pb^{2+}(aq) + \cancel{2(NO_3)^-(aq)} + \cancel{2K^+(aq)} + 2I^-(aq) \longrightarrow PbI_2(s) + \cancel{2K^+(aq)} + \cancel{2(NO_3)^-(aq)}$$

$$Pb^{2+}(aq) + 2I^-(aq) \longrightarrow 2PbI_2(aq)$$

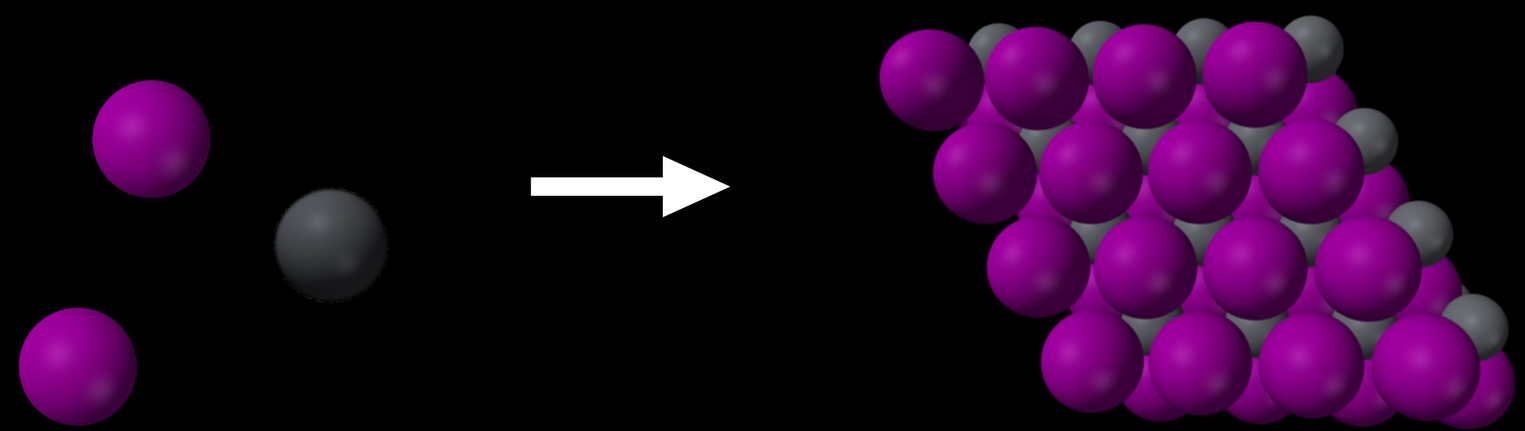
Net Ionic Equation

$$Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(s) + 2KNO_3(aq)$$



Ionic Equation

$$Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(s) + 2KNO_3(aq)$$



Net Ionic Equation

Did you learn?

When a solution of lead nitrate is added to a solution of potassium iodid[illegible]te of lead iodide that settles to the bottom of the beaker.

Molecular Equation

$$Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(s) + 2KNO_3(aq)$$

Ionic Equation

$$Pb^{2+}(aq) + \cancel{2(NO_3)^-(aq)} + \cancel{2K^+(aq)} + 2I^-(aq) \longrightarrow$$

$$2PbI_2(aq) + \cancel{2K^+(aq)} + \cancel{2(NO_3)^-(aq)}$$

Net Ionic Equation

$$Pb^{2+}(aq) + 2I^-(aq) \longrightarrow 2PbI_2(aq)$$

To translate an observed chemical change into a balanced equation of the correct type.

Acknowledgements

ommons.wikimedia.org/wiki/File:Water_molecule_3D.svg.
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"File:Oxygen Molecule.png," August 20, 2013. http://en.wikipedia.org/wiki/File:Oxygen_molecule.png.
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PRHaney. *English: Lead (II) Iodide Precipitates When Potassium Iodide Is Mixed with Lead (II) Nitrate*., July 29, 2008. Own work. http://commons.wikimedia.org/wiki/File:Lead_(II)_iodide_precipitating_out_of_solution.JPG.

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