|  |  |  |
| --- | --- | --- |
| **Physical Changes** | | |
| **Name** | **Description** | **Example** |
| dissolution |  |  |
| melting |  |  |
| freezing |  |  |
| vaporization |  |  |
| condensation |  |  |
| sublimation |  |  |
| deposition |  |  |

|  |  |  |
| --- | --- | --- |
| **Redox Reactions (electron transfer)** | | |
| **Name** | **Description** | **Example** |
| synthesis (from elements) |  |  |
| decomposition |  |  |
| combustion |  |  |
| combustion of a hydrocarbon |  |  |
| single replacement |  |  |

|  |  |  |
| --- | --- | --- |
| **Metathesis (double exchange)** | | |
| **Type** | **Description** | **Example** |
| formation of a precipitate |  |  |
| formation of a molecular substance (ex. weak acid, weak base, water) |  |  |
| formation of a gas |  |  |
| acid-base neutralization |  |  |

|  |  |  |
| --- | --- | --- |
| **Complex Ions** | | |
| **Type** | **Description** | **Example** |
| Complex ion formation |  |  |
| Ligand exchange |  |  |

|  |  |  |
| --- | --- | --- |
| **Hydrolysis – reactions with water** | | |
| **Type** | **Description** | **Example** |
| nonmetal oxide + water 🡪 oxyacid |  |  |
| metal oxide + water 🡪 metal hydroxide |  |  |
| metal + water 🡪 metal hydroxide + H2 (single replacement) |  |  |
| acid hydrolysis | Bronsted-Lowry (proton transfer from acid to base) | *CH*3*COOH*+*H*2*O*⇌*H*3*O*++*CH*3*COO*− |
| base hydrolysis | Bronsted-Lowry (proton transfer from acid to base) | *NH*3+*H*2*O*⇌*NH*+4+*OH*− |
| organic compound + water | Organic compound is split in two in which one part gets H+ and the other gets OH- | http://www.chemguide.co.uk/organicprops/esters/hydretheth.gif |