

# Chemistry Education Resources

## -Video List-

### Group 1A Elements (Hydrogen and Alkali Metals)

#### Hydrogen

01. Properties of Hydrogen
02. Hydrogen Combustion
03. Hydrogen Explosion

#### Sodium

01. Sodium Combustion in Chlorine
02. Properties of Sodium Hydroxide
03. Reaction of Sodium Hydroxide with Carbon Dioxide
04. Reaction of Sodium Carbonate with Limewater
05. Properties of Sodium
06. Sodium Combustion
07. Reaction of Sodium with Water
08. Reaction of Sodium Oxide with Water
09. Reaction of Sodium Peroxide with Water
10. Reaction of Sodium Peroxide with Cotton and Water
11. Reaction of Sodium Peroxide with Cotton and Carbon Dioxide
12. Decomposition of Sodium Bicarbonate
13. Reaction of Sodium Carbonate with Carbon Dioxide in Aqueous Solution
14. Conversion between Sodium Carbonate and Sodium Bicarbonate
15. Reaction of Sodium Carbonate with Hydrochloric Acid (Macro Photography)

#### Potassium

01. Cutting Potassium
02. Reaction of Potassium with Water
03. Potassium Combustion
04. Potassium Combustion and Sodium Combustion

### Group 2A Elements (Alkaline Earth Metals)

#### Magnesium

01. Combustion of Magnesium in the Air

02. Combustion of Magnesium in Nitrogen
03. Combustion of Magnesium in Carbon Dioxide
04. Reaction of Magnesium with Water
05. Reaction of Magnesium with Hydrochloric Acid

#### Calcium

01. Eggshell Soaking in the Vinegar
02. Reaction of Calcium Oxide with Water
03. Limewater and Reaction with Carbon Dioxide
04. Reaction of Calcium Carbonate with Hydrochloric Acid (Macro Photography)

#### Barium

01. Reaction of Barium Nitrate with Sodium Sulfate
02. Reaction of Barium Nitrate with Sodium Carbonate
03. Reaction of Barium Chloride with Sodium Sulfate (Macro Photography)

### Group 3A Elements

#### Aluminum

01. Burning Aluminum Foil
02. Reaction of Aluminum with Hydrochloric Acid
03. Reaction of Aluminum with Acid (Macro Photography)
04. Reaction of Aluminum with Sodium Hydroxide
05. Reaction of Aluminum with Base (Macro Photography)
06. Reaction of Aluminum Ions with Strong Base
07. Reaction of Aluminum Ions with Weak Base
08. Reaction of Sodium Aluminate with Strong Acid
09. Reaction of Sodium Aluminate with Weak Acid
10. Thermite Reaction (Aluminum and Iron Oxide)

### Group 4A Elements

#### Carbon

01. Burning Splints in Oxygen and Carbon Dioxide
02. Conductivity of Graphite
03. Preparation of Carbon Dioxide
04. Properties of Carbon Dioxide

05. Reaction of Carbon Dioxide with Water

### Silicon

01. Reaction of Silicon Dioxide with Sodium Hydroxide
02. Reaction of Sodium Silicate with Hydrochloric Acid
03. Acidity of Silicic Acid
04. Flame Retardant Effect of Sodium Silicate

### Group 5A Elements

### Nitrogen

01. Observation of Liquid Nitrogen
02. Laboratory Preparation of Ammonia
03. Ammonia Fountain Experiment
04. Reaction of Concentrated Hydrochloric Acid and Ammonia
05. Reaction of Copper with Diluted Nitric Acid
06. Collecting Nitric Oxide Gas
07. Reaction of Nitric Oxide with Oxygen
08. Reaction of Copper with Concentrated Nitric Acid
09. Collecting Nitrogen Dioxide Gas
10. Reaction of Nitrogen Dioxide with Water

### Group 6A Elements

### Oxygen

01. Oxygen Content in the Air
02. Re-Ignition of Glowing Splint by Oxygen
03. Combustion of Sulfur in Air and Oxygen
04. Combustion of Charcoal in Air and Oxygen
05. Combustion of Candle in Air and Oxygen
06. Combustion of Iron Wire in Air and Oxygen
07. Preparation of Oxygen (I)
08. Preparation of Oxygen (II)
09. Preparation of Oxygen (III)

### Sulfur

01. Dehydration of Concentrated Sulfuric Acid
02. Reaction of Sulfur with Copper
03. Combustion of Sulfur
04. Black Powder (Gun Powder)
05. Reaction of Sulfur Dioxide with Water
06. Bleaching Properties of Sulfur Dioxide
07. Reduction Properties of Sulfur Dioxide
08. Diluting Concentrated Sulfuric Acid

09. Reaction of Iron with Concentrated Sulfuric Acid
10. Reaction of Aluminum with Concentrated Sulfuric Acid
11. Reaction of Copper with Concentrated Sulfuric Acid
12. Reaction of Sucrose with Concentrated Sulfuric Acid
13. Reaction of Carbon with Concentrated Sulfuric Acid
14. Hygroscopic Property of Concentrated Sulfuric Acid
15. Application of Gypsum

### Group 7A Elements (Halogens)

### Chlorine

01. Laboratory Preparation of Chlorine Gas
02. Collecting Chlorine Gas
03. Reaction of Chlorine Gas with Iron
04. Reaction of Chlorine Gas with Copper
05. Reaction of Chlorine Gas with Hydrogen
06. Properties of Chlorine Water (Freshly Prepared)
07. Bleaching Ability of Sodium Hypochlorite

### Iodine

01. Reaction of Potassium Iodide with Lead Nitrate (Macro Photography)

### Properties of Halogen

01. Reaction of Sodium Bromide with Chlorine Water
02. Reaction of Potassium Iodide with Chlorine Water
03. Reaction of Potassium Iodide with Bromine Water
04. Reaction of Calcium Chloride with Silver Nitrate
05. Reaction of Sodium Bromide with Silver Nitrate
06. Reaction of Potassium Iodide with Silver Nitrate

### Transition Metals

### Chromium

01. Reaction of Potassium Chromate with Silver Nitrate (Macro Photography)
02. Reaction of Chromium(III) Chloride with Sodium Hydroxide (Macro Photography)

### Iron

01. Magnetism of Iron
02. Reaction of Iron with Water Vapor
03. Reaction of Iron with Diluted Hydrochloric Acid
04. Reaction of Iron with Diluted Nitric Acid
05. Reaction of Iron with Concentrated Nitric Acid
06. Reaction of Sodium Hydroxide with Iron(II) Sulfate

07. Reaction of Sodium Hydroxide with Iron(III) Chloride
08. Test for Iron(III) Ions in Aqueous Solution
09. Oxidization of Iron(II) Ions to Iron(III) Ions
10. Reduction of Iron(III) Ions to Iron(II) Ions
11. Test for Iron(II) Ions in Aqueous Solution
12. Reaction of Iron(III) Chloride with Limewater

### Nickel

01. Reaction of Nickel(II) Chloride with Sodium Hydroxide  
(Macro Photography)

### Copper

01. Properties of Copper
02. Heating Copper(II) Hydroxide
03. Reaction of Copper(II) Oxide with Carbon
04. Reaction of Copper(II) Sulfate with Lime Water
05. Reaction of Copper(II) Sulfate Solution with Iron
06. Reaction of Copper(II) Sulfate with Sodium Hydroxide
07. Reaction of Copper(II) Sulfate with Sodium Hydroxide  
(Macro Photography)
08. Conversion between Copper(II) Sulfate and Copper(II)  
Sulfate Pentahydrate

### Silver

01. Reaction of Silver Nitrate with Hydrochloric Acid
02. Reaction of Silver Nitrate with Sodium Chloride (Macro  
Photography)

## Organic Chemistry

### Hydrocarbon

01. Methane Combustion
02. Preparation of Methane
03. Substitution Reaction of Methane
04. Preparation and Properties of Ethylene
05. Ethylene Combustion
06. Preparation and Properties of Acetylene
07. Acetylene Combustion
08. Benzene Combustion
09. Properties of Benzene

### Hydrocarbon Derivatives

01. Density of Ethanol
02. Ethanol Combustion
03. Catalytic Oxidation of Ethanol

04. Reaction of Ethanol with Sodium
05. Reaction of Ethanol with Potassium Permanganate
06. Fehling's Test for Acetaldehyde
07. Tollens' Test for Acetaldehyde
08. Acetaldehyde Combustion
09. Acidity of Acetic Acid
10. Reaction of Acetic Acid with Sodium Carbonate
11. Recrystallization of Benzoic Acid
12. Esterification
13. Hydrolysis of Ethyl Acetate
14. Solubility of Phenol
15. Oxidation of Phenol
16. Acidity of Phenol (I)
17. Acidity of Phenol (II)
18. Substitution Reaction of Phenol
19. Color Reaction of Phenol
20. Reaction of Glucose and Freshly Prepared Copper(II)  
Hydroxide
21. Tollens' Test for Glucose
22. Hydrolysis of Sucrose

### Polymers

01. Color Reaction of Starch with Iodine
02. Hydrolysis of Starch
03. Salting-out of Protein
04. Heating Polyethylene Plastic

## Reaction Rate and Equilibrium

### Influence of Reaction Rate

01. Concentration Effect on Reaction (I)
02. Concentration Effect on Reaction (II)
03. Temperature Effect on Reaction (I)
04. Temperature Effect on Reaction (II)
05. Catalyst Effect on Reaction (I)
06. Catalyst Effect on Reaction (II)
07. Catalyst Effect on Reaction (III)
08. Surface Area Effect on Reaction Rate

### Influence of Chemical Equilibrium

01. Concentration Effect on Equilibrium Shift (I)
02. Concentration Effect on Equilibrium Shift (II)

### Precipitation Reaction

01. Precipitation Dissolving

02. Precipitation Conversion (I)
03. Precipitation Conversion (II)

### Acids and Bases

01. Acid-base Indicator: Litmus and Phenolphthalein
02. Homemade Acid-Base Indicator
03. Comparison of Strong Acids and Weak Acids
04. Acidity Comparison of Weak Acids
05. pH of Common Substances (I)
06. pH of Common Substances (II)
07. pH of Various Salt Solutions
08. Conditions for Promoting or Inhibiting Hydrolysis of Iron(III) Chloride
09. Double Hydrolysis Reaction

### Electrochemistry

#### Metal

01. Reactions of Metal with Hydrochloric Acid
02. Single Replacement Reactions between Metals

#### Battery

01. Fruit Battery
02. Galvanic Cell
03. Fuel Cell

#### Electrolysis

01. Electrolytic Reaction of Water
02. Electrolytic Reaction of Sodium Chloride Solution
03. Electrolytic Reaction of Copper(II) Chloride Solution

### Apparatus and Operations

#### Apparatus

01. Loading Solid Reagents
02. Loading Liquid Reagents
03. Using of Graduated Cylinder
04. Apparatus Set for Solid-Solid Reaction with Heating
05. Apparatus Set for Solid-Liquid Reaction with Heating
06. Apparatus Set for Solid-Liquid Reaction without Heating

#### Operations

01. Gas Collection by Water Displacement
02. Gas Collection by Downward and Upward Delivery
03. Airtightness Inspection

04. Tail Gas Treatment
05. Backflow Prevention Device
06. Filtration
07. Evaporation
08. Distillation
09. Extraction
10. Separating Two Immiscible Liquids

### Basic Concepts

#### Substance Change

01. Ice, Water and Vapour
02. Breaking Match Snap and Glass
03. Passing Carbon Dioxide into Limewater
04. Reaction of Marble with Hydrochloric Acid

#### Combustion

01. Candle Flame
02. Principle of Fire Extinguisher
03. Explosion of Flour
04. Complete and Incompletely Combustion

#### Diffusion

01. Diffusion of Magenta in Water
02. Diffusion of Ammonia Molecule
03. Reaction Between Ammonia and Nitric Acid

#### Dissolve

01. Sucrose Dissolves in Water
02. Iodine and Potassium Permanganate Dissolve in Water and Kerosene
03. Ethanol Dissolves in Water
04. Heat of Dissolution
05. Crystallization from Saturated Solution
06. Emulsion

#### Colloid

01. Tyndall Effect
02. Colloid Electrophoresis
03. Colloid Coagulation
04. Colloid Dialysis

#### Conservation of Mass

01. Mass Change of the Reaction (Enclosed)
02. Mass Change of the Reaction (Opened)

## Reaction Heat

01. Exothermic Reaction
02. Endothermic Reaction
03. Determining Heat of Neutralization

## Microstructure (Animation Simulation)

## Molecular Model

01. Molecular Structure of Methane
02. Molecular Structure of Ethylene
03. Molecular Structure of Acetylene
04. Molecular Structure of Benzene
05. Molecular Structure of Toluene
06. Molecular Structure of Phenol
07. Molecular Structure of Bromoethane
08. Molecular Structure of Ethanol
09. Molecular Structure of Diethyl Ether
10. Molecular Structure of Acetaldehyde
11. Molecular Structure of Acetic Acid
12. Molecular Structure of Ethyl Acetate

## Animation Simulation

01. Ionization of Sodium Chloride (in Water)
02. Ionization of Sodium Chloride (Molten State)
03. Complete Ionization
04. Partial Ionization
05. Nonelectrolyte
06. Silver Chloride Precipitation
07. Atomic Structure