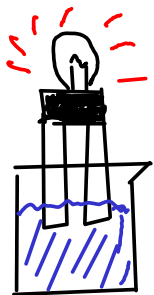


## Ionic theory experiment



Simple conductivity tester: The stronger the electrolyte, the brighter the light.

## SOME PURE COMPOUNDS (MOLECULAR AND IONIC) DISTILLED WATER

No light: Pure water is a NONELECTROLYTE

## SOLID SODIUM CHLORIDE

In the solid state, ionic compounds like NaCl do not conduct electricity. Ions are NOT free to move around.

## SOLID SUCROSE

Like water, solid sucrose does not conduct.  $C_{12}H_{22}O_{11}$

## MOLECULAR AND IONIC SOLUTIONS

### SODIUM CHLORIDE + WATER

This solution conducts - sodium chloride is a STRONG ELECTROLYTE - it breaks apart in water to form free ions.

### SUCROSE + WATER

The sugar water solution does not conduct - sucrose is a NONELECTROLYTE. A sucrose solution exists as dissolved sugar molecules - not ions.

## ACIDS

### PURE (GLACIAL) ACETIC ACID

Pure liquid acetic acid is a NONCONDUCTOR - no ions present. (If it were an ionic liquid, we would expect conductivity, so this shows acetic acid in the pure state is MOLECULAR)

### ACETIC ACID + WATER

Adding water to pure acetic acid creates a solution that does conduct electricity (albeit weakly) - we conclude that some of the acetic acid forms ions in a reaction with water.

### 2M ACETIC ACID (AQUEOUS)

Light bulb lights, but fairly dim. WEAK ELECTROLYTE.

### 2M HYDROCHLORIC ACID (AQUEOUS)

Light bulb lights up much more strongly. Hydrochloric acid is a STRONGER electrolyte than acetic acid. (In fact, HCl is considered a "strong electrolyte" just like NaCl)