



# CHEMICAL WELDING ( $\text{Al}_2\text{O}_3$ and Fe)

**Purpose :** To melt the iron metal by using energy, which is obtained from the reaction of  $\text{Fe}_2\text{O}_3$  and Al metal.

## Materials :

- Powder Aluminum
- $\text{Fe}_2\text{O}_3$  (Iron (III) oxide)
- $\text{KMnO}_4$
- Glycerin

**Notes :** Aluminum metal is more active than iron. Because of this, to reduce aluminum (III) oxide into iron metal aluminum is used. Also we need energy to start the reaction. This energy is obtained from the oxidation of glycerin by potassium permanganate. The reduction reaction of iron by aluminum metal is an exothermic reaction. This exothermic reaction cause to melt iron metal. The reaction equation will be:



**Procedure:** Mix the equal amounts of  $\text{Fe}_2\text{O}_3$  and aluminum powder in a crucible. On to the mixture add a few amounts of  $\text{KMnO}_4$ . Pour 3 or 4 drops of glycerin on to the  $\text{KMnO}_4$ . Observe the reaction. The reaction is exothermic reaction and there will be explosive. Be careful by doing the experiment and use goggles.