The Thermite Reaction

What is happening?

This demonstration shows how two powders can react quite violently with each other, to produce a huge amount of heat. When aluminium reacts with iron (+3) oxide, it is a highly exothermic reaction. Aluminium is more reactive than iron, and so it reacts with form aluminium oxide, leaving iron.

Huge amounts of heat and energy are released during this reaction. The temperature can reach over 2000^{o}C, which is higher than iron's melting point (1535^{o}C).
When the molten iron drops into the water, huge clouds of steam are also rapidly released as the water vaporises.

Did you know?

The thermite reaction, also known as the Goldschmidt process, is used to join train tracks together via an amazing process called exothermic welding, which basically involves sending molten iron into a sand mould.

It is very useful for welders as it does not require charcoal or *carbon* like smelting does, and so leaves a nice relatively pure iron metal. Other metals such as *copper* can also be prepared by a thermite reaction. Even *uranium* has been produced from uranium ore by the thermite process!