Investigating the energy contained in different fuels.

Aim: To investigate the energy content of homologous alcohols (Methanol → Pentanol)

Background information:

Organic Molecules and Homologous Series

Organic molecules are made of carbon and hydrogen atoms. They are very important in chemistry. They can also have oxygen, nitrogen, phosphorus, and sulfur atoms. But the main part is made of carbon atoms. Hydrocarbons are organic molecules made only of hydrogen and carbon atoms. They are the simplest organic compounds. There are many types of hydrocarbons like alkanes, alkenes, and alkynes. They are different because of how the carbon atoms are bonded together.

A homologous series is a group of organic compounds that are alike. Each compound in the series has a repeating part, usually -CH2-. The compounds are very similar but get bigger with each new member . Alcohols are a homologous series. They start with methanol (CH3OH). Then comes ethanol (C2H5OH), propanol (C3H7OH), and so on. The compounds get bigger by one -CH2- group with each new alcohol.Each of these alcohols contains the hydroxyl functional group (-OH) bonded to a carbon atom, which is characteristic of the alcohols series

Alcohols

Alcohols are basic things with one or more hydroxyl (-OH) groups on a carbon atom. The (-OH) group makes alcohols different from other things with just carbon and hydrogen. Alcohol can be used to help mix other things or to make things burn. The energy that alcohols give off when they burn depends on how big the alcohol is. Bigger alcohols with more carbon atoms can give off more energy when they burn because they have more carbon and hydrogen that can burn.

Combustion Reactions

Combustion reactions are when a thing burns and makes heat. They happen when a fuel, like gas or wood, mixes with air. The air has oxygen, which helps the fuel burn. When things burn, they make new things too. For example, when stuff like alcohol burns all the way, it makes carbon dioxide and water. The science words for it are: