

4. Noble and base metals

The history of metals is closely linked to the technical development of human.

Since the Bronze Age (around 3000 BC), people have been able to extract copper from copper ore with simple wood-burning stoves and have used additives such as tin to convert copper to brass to improve its metallic properties.

This knowledge was used at that time to produce good tools but also weapons.

A Kenyan professor who was familiar with the brass manufacturing process from his childhood in a village recalled that the locals used these weapons to drive the colonists out.

Many other areas of Africa have also produced copper from copper ore since about 1000.

The economic gain from the sale of copper or bronze was great and led to wealth and power.

Even today, we see the economic advantage of countries that are able to sell very rare metals in the world market: platinum (catalysts), gold (jewellery, electronics), tantalum/coltan (cell phones), lithium (batteries), etc.

Unfortunately, too many wars have been waged because of these precious metals.

Today's technology would not work without metals.

However, because the use of different metals depends on their properties, we want to learn about some of these properties through the experiments in this module. It would certainly not make sense to install a bad electrical conductor in a house and risk a fire due to overheating of the conductor. Consumers would also be annoyed if they bought an expensive “gold” jewellery at full price to which lead had been added. In the past, people tested the hardness of jewellery with their teeth; today we do this by determining the density.

We will learn that cheap base metals have to be protected against corrosion and that we can improve the properties of the metals by forming alloys.