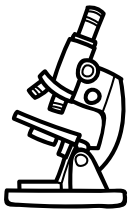
MINERALOGY AND CHEMISTRY

IDENTIFYING FIT FOR PURPOSE MATERIALS

Make observations while using a microscope to identify the purpose of the properties of materials and how they are used in their own environment.



CAREER PATH

Mineralogy and chemistry focus on developing microscopy and observational skills. By examining various materials under the microscope and exploring fit-for-purpose properties, participants gain insight into materials science, which is crucial for fields like engineering and innovative product design.

F1 LINK

F1 cars are made of fit for purpose materials and use complicated chemistry for their fuel and components. Using microscopes as a tool is an essential part of the development process for these machines.

SCIENCE KNOWLEDGE

Science uses our five senses to make sense of the world. Tools like microscopes enhance our senses so that we can observe, test new and (in this case) smaller things that are difficult or impossible to see with the naked eye. In the case of chemistry and mineralogy, scientists use a microscope to investigate new substances with properties that are useful. Carbon fiber is very strong, how is that property used in the making of an F1 car? Observe the properties of the beeswax for example, how can we use that property? Would beeswax be useful in an F1 Car? Why or why not?

DEADLY CONNECTION

Materials in the natural environment are designed through iterative processes. Different properties of materials are tested to solve problems. This can take minutes, days, years, decades and longer, in the lab and/or on the land.

THE ACTIVITY

STEP 1

If you need, ask for help to get some instructions on how to use the focus and zoom controls on the microscope.

STEP 2

Place various available samples under the microscope.
Predict: What do you expect to see? Ask learners to turn their question of what they think they will see into the form of a hypothesis: If it is rigid, then I will see.... This is called a hypothesis. Here is a suggestion. If I place the two rigid materials under the microscope, they will look the same.

STEP 3

Use the zoom and focus to make sure you can see the samples. You will be able to see the samples on the screen above the microscope.

STEP 4

There are many observations you can make including: colour, size, regularity, uniformity and hydrophobicity!
Observe: Think of some similarities between the samples you viewed. Think of some differences between the samples you viewed. Can you respond to the hypothesis you made earlier?

STEP 5

Explain: You can make some connections between the observations and uses of materials. Based on what you observed under the microscope, which material would be appropriate for keeping a Formula 1®driver dry? or safe in their car?
What other fit-for-purpose uses can you imagine for these different materials?

WWW.DEADLYSCIENCE.ORG.AU/FORMULA-1/
For lesson plans, resources for the classroom and teacher guides to recreate this experiment for your deadly learners.