# Digital microscope

**Overview:**
Environmental scientists use a range of equipment to explore the natural environment. Use the digital microscopes to explore the microscopic world and view objects that we cannot see with the naked eye in greater detail. Why does pollen stick to a bee's legs and what do microfibers look like up close?

**Programme use:**
Hands on table top activity.

## How to set up the microscope:

**1.** Attach the microscope holder to the base by loosening the holding collar on the stand and inserting the microscope support frame. Then tighten the collar to secure the frame.

**2.** Insert the digital microscope into the holding frame and use the securing nut to hold the microscope in place.

**3.** Attach the mini HDMI cable to the microscope and the TV.

**4.** Attach the USB cable to the microscope and the TV.

**5.** Turn the TV on and select the HDMI input.

**6.** The image from the microscope should now appear.

## How to use the microscope:

**1.** Place a slide or object on the stand and directly underneath the digital microscope.

**2.** Use the position adjuster on the back of the frame to move the microscope as close as possible to the object and lock it in place.

**3.** Use the wheel on the microscope to select the magnification you want from 10x to 220x magnification.

**4.** Use the focus adjuster on the side of the support frame to fine tune your focus.

## Experiments to try:

- Use the slides provided to explore objects in microscopic detail.
- First try viewing them at around 20 – 40x magnification. What do you see?
- Increase the magnification to 200-220x. What do you see now?
- One slide contains fluff taken from a tumble drier. View this under a microscope to see what it is made of. Fibres like this also get washed away in washing machines and end up in the oceans. How do you think this affects our oceans and animals that live there?

## How does this relate to NERC science?

NERC scientists use microscopes to better understand our environment. A range of different microscopes are used, these include:

- Optical microscopes – magnification of up to 1,500x.
- Electron microscope – magnification of up to 10,000,000x.

Using these different methods, NERC scientists can:

- Investigate past climates by identifying organisms and pollen from ice, rock or sediment core.
- Identify microscopic pollutants such as plastic microfibers.
- Identify particulate matter that can affect human health.

## Key take home messages:

- The microscopic world is fascinating
- Studying the microscopic world allows scientists to better understand the processes that take place in the environment and how it is changing.
- We cannot always see what is in our air, land and water with the naked eye and how it affects our environment.

## Applications:

- Earth science
- Biological science
- Air quality
- Marine and fresh water ecology