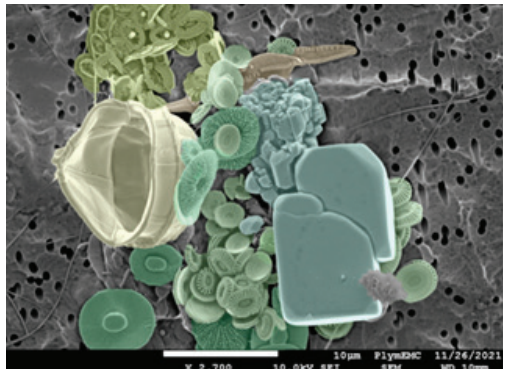
Microscopy LIVE!

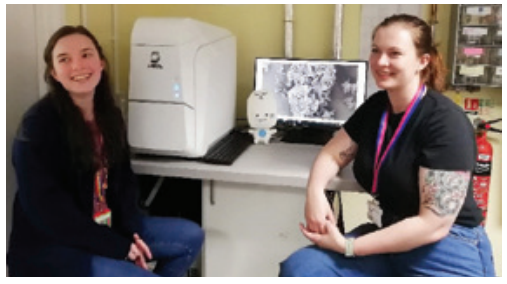
Electron Microscopy and its uses can often seem shrouded in mystery to those not directly involved with it but, Microscopy LIVE! is a chance to peek through the curtains, allowing anyone and everyone in on the secret. Microscopy LIVE! is a free monthly public outreach event designed to make science - and in particular electron microscopy - more accessible, giving a more human experience to some of the more technical aspects of science.

The idea for Microscopy LIVE! was developed by Dr Natasha Stephen before being taken over by Dr Jen Mitchell, Lorelei Robertson, and the rest of the team at Plymouth Electron Microscopy Centre, evolving it into a fully-fledged bi-monthly event series with a different theme every other month. Audience participation is highly encouraged, and we invite all attendees to direct us to the parts of the material being analysed that are of interest to them. We do our best to answer every single question we get during the session, be it about the electron microscope, a particular technique we are demonstrating, or about the sample we're looking at. Our goal is to make sure that everyone involved has an hour of casual (yet entertaining) science learning, and everyone who registers gets access to a recording of the session as well as a summary booklet of all the data we collect, so nobody misses out.



False-colour image of marine micro-organisms collected during Microscopy LIVE!

Our audience is largely members of the general public but Microscopy LIVE! is open to everyone,

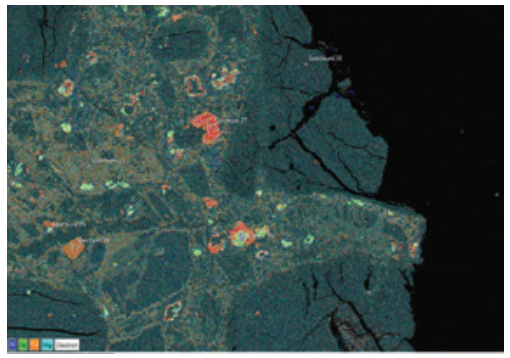


Hosts Lorelei Robertson (left) and Dr Jen Mitchell (right) with the JEOL NeoScope benchtop SEM system used for Microscopy LIVE!

and we definitely enjoy having fellow scientists join us. We have had extremely positive feedback so far and are immensely grateful to everyone who attends. Following our initial success, we're pleased to announce that Microscopy LIVE! has partnered with JEOL UK Ltd, who are helping us bring the Microscopy LIVE! to more people and supporting us in creating the best events we can.

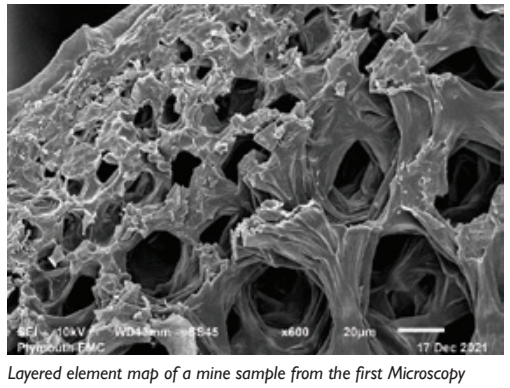
Microscopy LIVE! has a different theme each month, often chosen by popular demand of our attendees. We aim to cover as many topics as we can, and we'll never do the same sample twice! Since starting in October 2021, Microscopy LIVE! has focused on...

- **Geology:** An introduction to some of the analytical techniques used for mineral identification, using a complex rock sample from a mine in South Africa;
- **Marine micro-organisms:** Showing how high magnification analysis of samples can be helpful for species identification of micro-organisms in our coastal waters that cannot be seen with the naked eye;



Layered element map of a mine sample from the first Microscopy LIVE! event.

- **Winter:** The last Microscopy LIVE! of 2021, looking at a range of festive samples including holly leaves and reindeer hair;
- **Animal Fur:** We compared a variety of animal hair from sheep to horses, cats to dogs, and wolves to tigers;
- **The Winchcombe Meteorite:** Celebrating 1 year after the fall of the Winchcombe meteorite, we held a dedicated Microscopy LIVE! event to look at the piece being analysed by the planetary researchers based at Plymouth Electron Microscopy Centre (PEMC), showing how the data collected from the electron microscope can be used to help figure out the origin of the meteorite and what it can tell us about the solar system;
- **Art:** Art and Science are not usually two subjects that mix, so we decided to change that. We'll be looking at different artists' tools and figuring out what makes up the several types of mediums that different artists use.
- **Pollen:** Diving into the world of plants, we explored flower and tree pollen in a spring-themed event;
- **Insects:** Using our JEOL Neoscope, we found out just how hairy moths are;
- **Leaves:** A whirlwind tour of various tree leaves revealed just how diverse they are!



Layered element map of a mine sample from the first Microscopy LIVE! event.

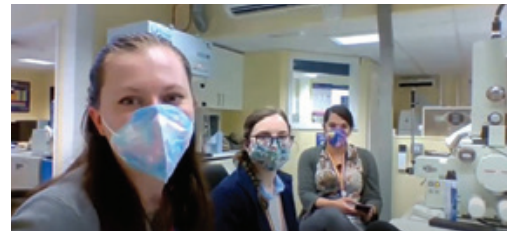
We thoroughly enjoy presenting Microscopy LIVE! It's an hour where we can sit down and have some fun learning about all manner of material, whilst also sharing our knowledge and interacting with our attendees. If Microscopy LIVE! provides some insight and clarity to our audience and shows how cool and useful electron microscopy is, then we've done our job.



Jen and Lorelei investigate paint brush bristles using their JEOL NeoScope benchtop SEM.

Looking forwards, Microscopy LIVE! will stay online so we can provide free science events to a wider range of people. However, as we are reaching a point where in-person events are a possibility again, we've set ourselves the goal of taking Microscopy LIVE! on the road. PEMC recently acquired a JEOL JCM-7000 NeoScope Benchtop SEM (and an accompanying sturdy trolley) which will allow us to physically bring Microscopy LIVE! to schools, external events, showcases and so on. This bit of kit is also extremely user friendly so anyone can take control of analysis, no matter their experience level.

Our next event dates and topics are on our website. If you'd like to get involved, head on over to our website at www.plymouth.ac.uk/emc and register for free. We hope to see you there!



From left to right, Jen, Lorelei, and Dr Natasha Stephen greet the audience for a special Microscopy LIVE! all about the Winchcombe meteorite.