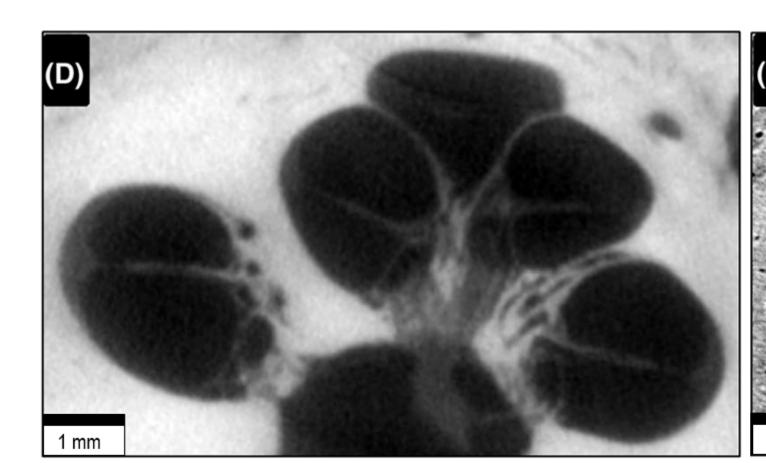
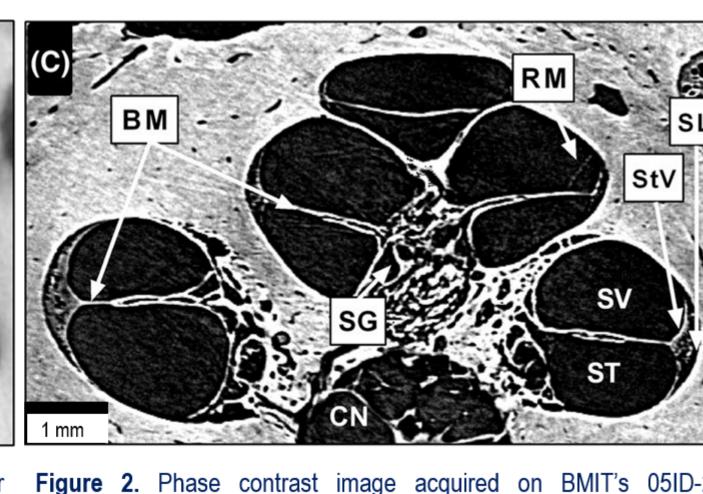
HOW WE USE LIGHT

OUR BEAMLINES USE THREE MAIN TECHNIQUES TO HELP OUR SCIENTISTS IN THEIR RESEARCH AND DISCOVERIES.

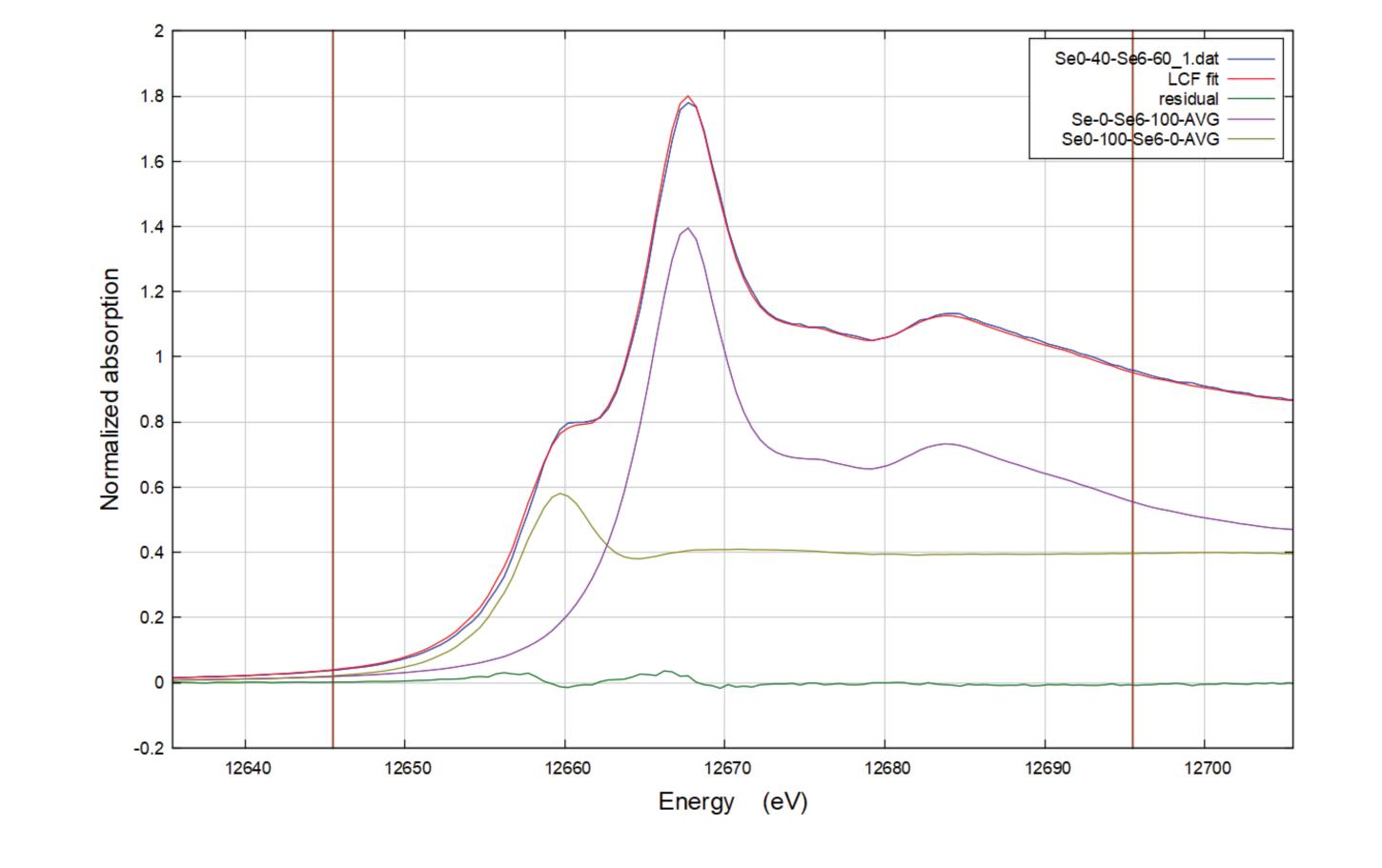
Synchrotron X-rays allow us to take an image of a sample. By studying the interaction of light with an object, we are able to get information about the structure or the function of what we are imaging. Our beamlines can take a picture of the tiny airways in a lung or get a three-dimensional image of materials like steel pipelines. Images courtesy of Mai Elfarnawany and Hanif Ladak





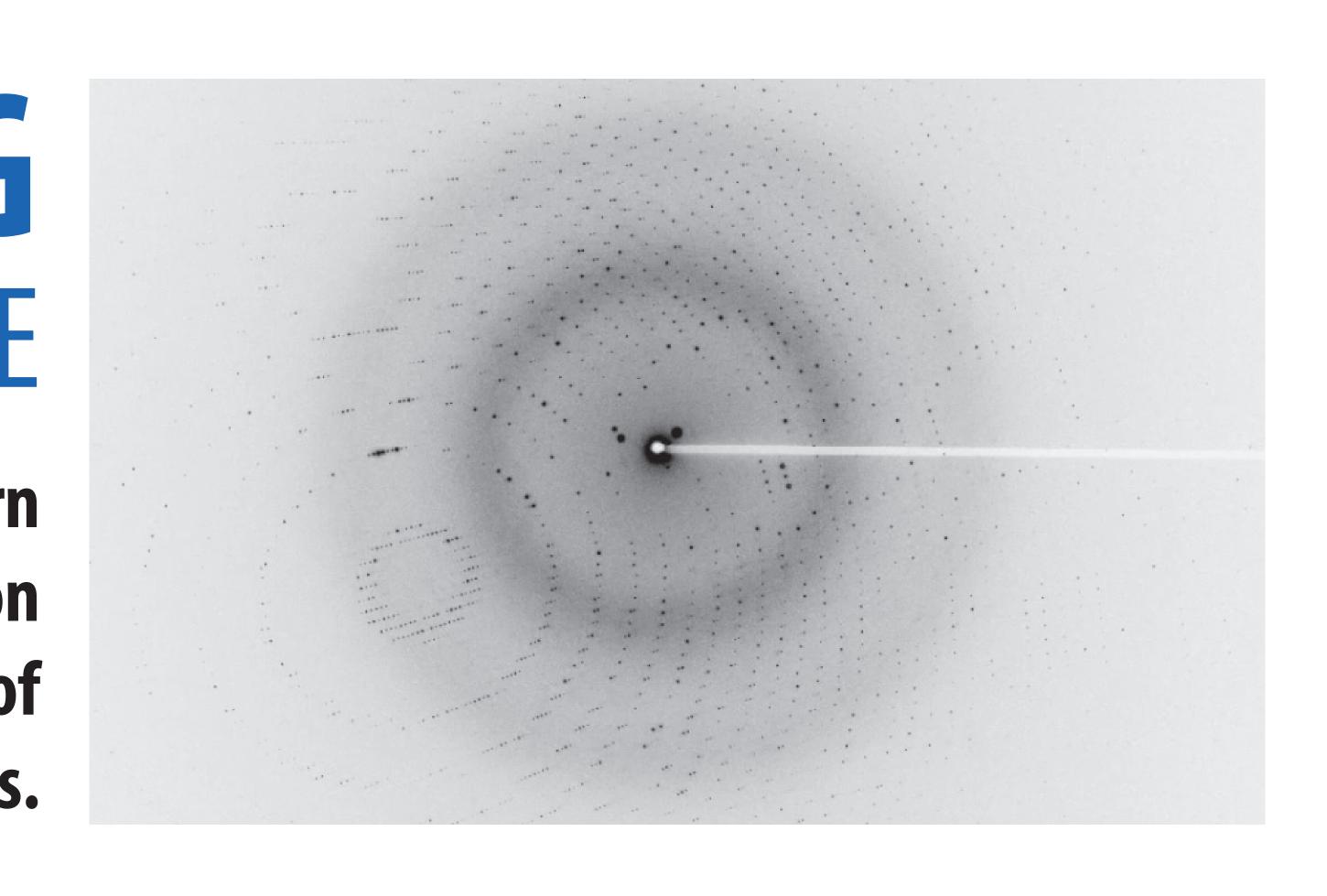
Jelinujuju j ANALYZING THE CHEMISTRY

We can see how different wavelengths of light interact with matter, allowing us to analyze what the sample is made of. With spectroscopy we can look at the matter inside of a lentil or model the molecules that exist in space.



3- DIFFRACTION AND SCATTERING UNDERSTANDING THE STRUCTURE

Light can bounce off a sample and create a unique pattern. This pattern allows us to gain insight into the structure of an object. With diffraction and scattering we are able to understand the shapes of proteins inside of living things or visualize the structure of crystalized materials.



The CLS produces light across a large portion of the light spectrum, making it an excellent tool for research. In order to gather information, the wavelength of the light has to be appropriate for the size of the material being studied. For example, shorter wavelengths allow scientists to gather information about smaller things. At our facility, researchers can choose which wavelength or range of wavelengths to use, allowing for flexibility in their research and the ability to see tiny details that can't be seen otherwise!

