Photomicrography of Rocks and Minerals

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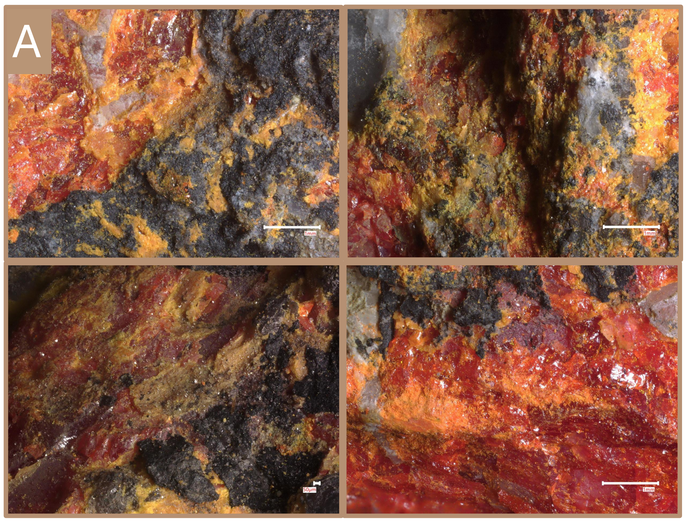

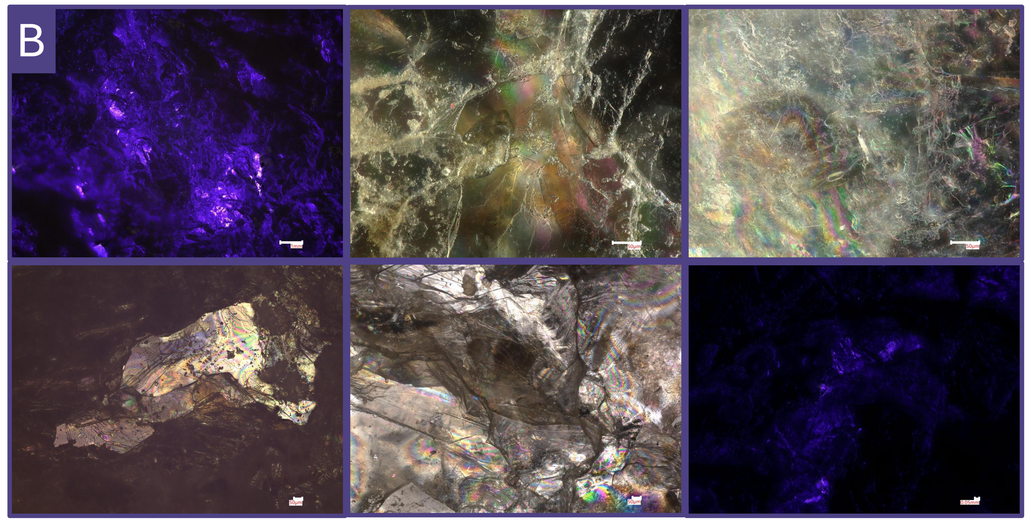

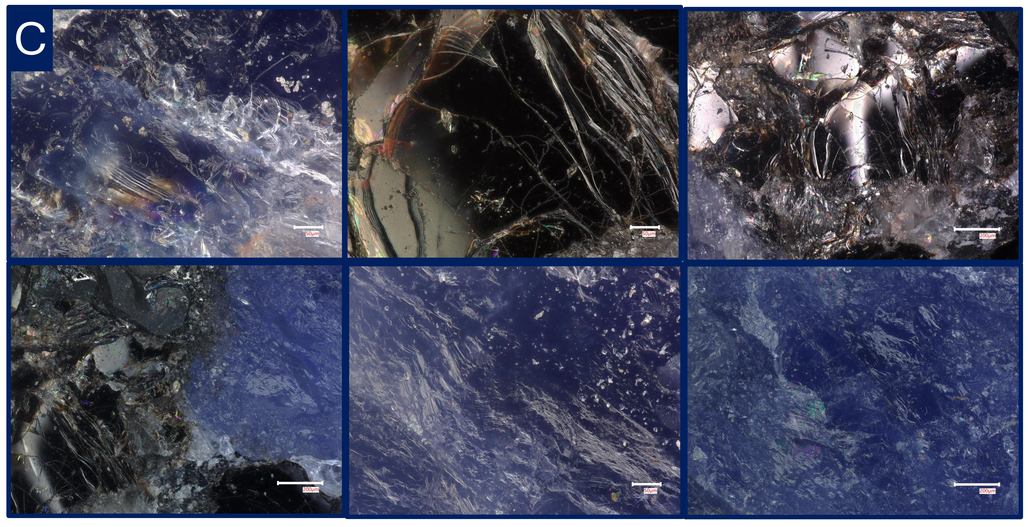

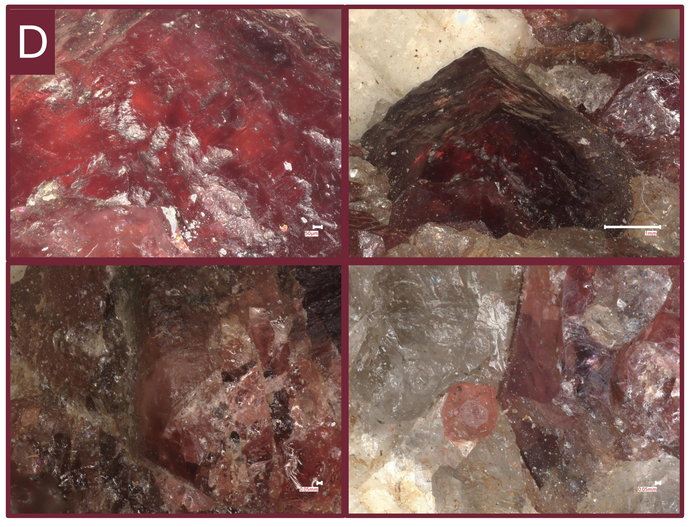

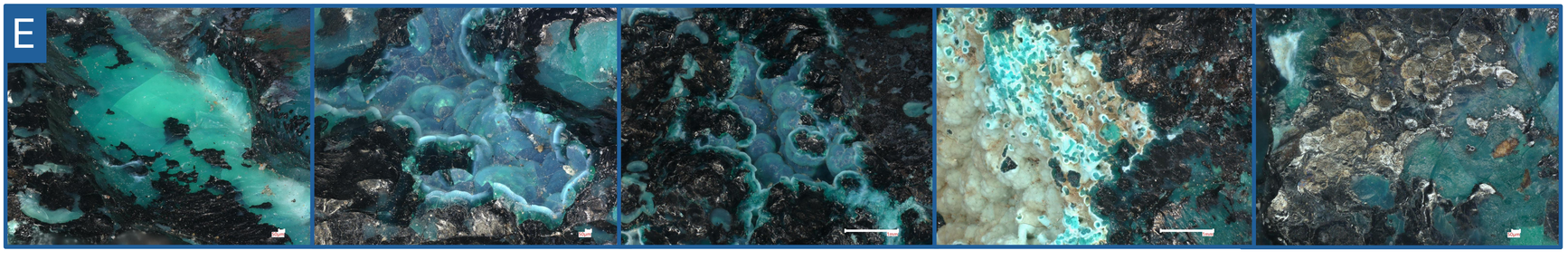

All descriptors are from left to right, top to bottom.

- A. **Orpiment**: *50x, 50x, 100x, 50x*
- B. **Mica**: *80x under UV, 100x, 500x, 500x, 150x 100x, 80x under UV*
- C. **Sodalite**: *500x, 500x opaque mineral (OM), 200x (OM), 200x (with OM), 500x, 200x*
- D. **Garnet**: *150x, 50x, 80x, 80x*
- E. **Malachite**: *100x, 100x, 50x, 80x, 100x*

Abstract

In this project, I took photomicrographs of the surfaces of various geological subjects with the end goal of submitting a photograph to the 2026 Nikon Small World contest. This occurred under the usage of multiple different types of microscopes, such as the Keyence VHX-7000, Nikon Ni-U, and the Leica EZ4 microscopes. Because my portfolio is focused on geology, I took photographs of a multitude of different rocks and minerals to capture the ideal pictures for my project. Since these subjects were not flat, I mainly used the digital Keyence microscope. The process of capturing an image typically includes finding the right angle, experimenting with the light settings, and using a depth composition feature. Outside of the aesthetic appeal, geological microscopy is an extremely effective learning tool for students and amateur geologists. While many geological subjects may look identical to the naked eye, employing a microscope reveals fascinating new structures and hidden differences between them. This work highlights structural features that often go unnoticed, revealing a whole new world just on the surface of a rock.

Methods

Multiple different forms of light microscopy techniques were used in this portfolio. Namely, the Keyence VHX-7000, Nikon Ni-U, and the Leica EZ4 were used. Optical microscopes operate by shining visible light through a sample and using multiple different lenses to visualize the image. After that, the image is photographed and captured to a photo database. The Keyence digital microscope combines high-resolution image sense and motorized stages to display instant depth-field imaging. The technique I used most with the Keyence was the depth composition feature. This allowed me to take multiple photos of a rock specimens at varying focal planes and stitch it together to create one coherent, focused image.

Acknowledgements

I would like to thank Professor Bono for allowing me to use the rocks and minerals from his teaching lab. Without him, I would not have been able to have such a variety of specimens for my project. I would also like to thank Dr. Ali for allowing me to explore my interest in geology throughout this BioArt project. Having access to such powerful microscopes has allowed me to see these geological specimens in a new, fascinating light.
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References

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Nikon Announces It Is Accepting Images for Its Nikon Small World Photo Competition and Movies for Its Nikon Small World in Motion Video Competition. NewsRX LLC, 2025. Print.