



Fulgurite

Photographs and article
by Anna Yingst

What is Fulgurite?

Fulgurite is the result of lightning striking the ground and fusing together silica sand or rock to create crusts of glass. It is found worldwide and just about every strike has the potential to produce it.

These particular samples were found underneath a utility (telephone) pole and may not have formed from lightning, but rather by electrical wiring damaged during a storm. It is also possible that lightning struck the pole and made its way down to the concrete below.



Right: Image captured at 1:2

Above: Image captured at 5x depicting the top left portion of the same sample.

When fulgurite is entirely made up of silica sand it is called lechatelierite. The exact composition of this "fossilized lightning" is unknown. These samples were likely created from silica sand found in the concrete as well as impurities from the concrete and soil. These impurities create the beautiful greens, reds, and browns.



Collecting The Samples

These samples were collected after a severe storm in Geneva IL. They were located in a back alleyway near a damaged powerline. Mark Yingst, a jeweler and lapidary, saw the scar pattern in the concrete and began finding small perfect spheres in the nearby flower bed. He returned multiple times to collect buckets of the dirt. After tediously sifting through all the soil he gathered, with the help of a few friends, he was left with a beautiful collection of fulgurite consisting of hundreds of spheres and assorted shards of green glass.

A small portion of the fulgurite was shipped to New York where the images in this article were captured in the Hi-Mag Lab at Rochester Institute of Technology.



Above: Source: Mark Yingst Image taken before collecting the samples. It depicts the lightning-like pattern created in the concrete.



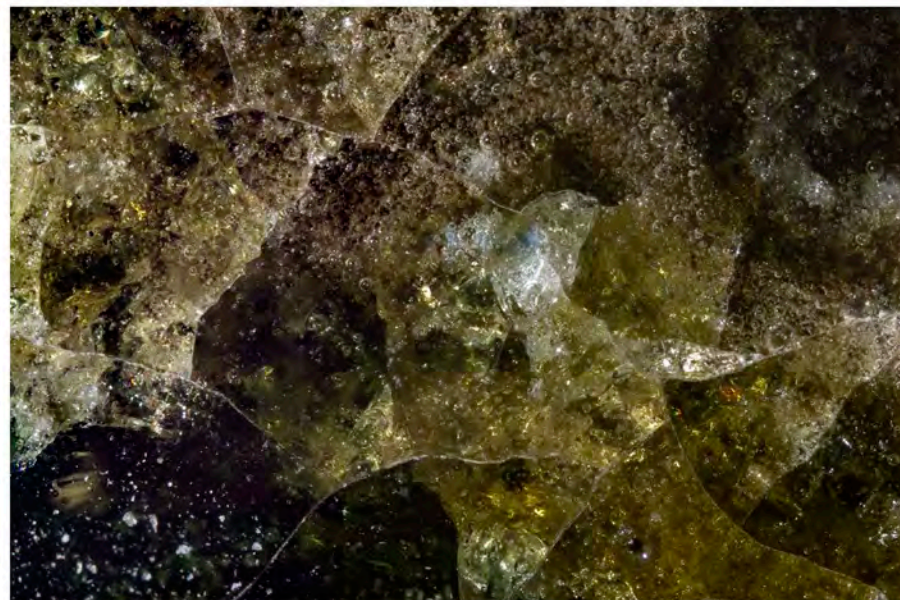
Above: Source: Mark Yingst Image depicts a large sample of glass spheres found in the dirt.

Right: This image depicts five small spheres that had been fused together captured at 4x



Fulgurite Up Close

Top Right: Image captured at 5x
Top Left: Image captured at 4x
Bottom Left: Image captured at 4x
Bottom Right: Image captured at 4x



The Set Up

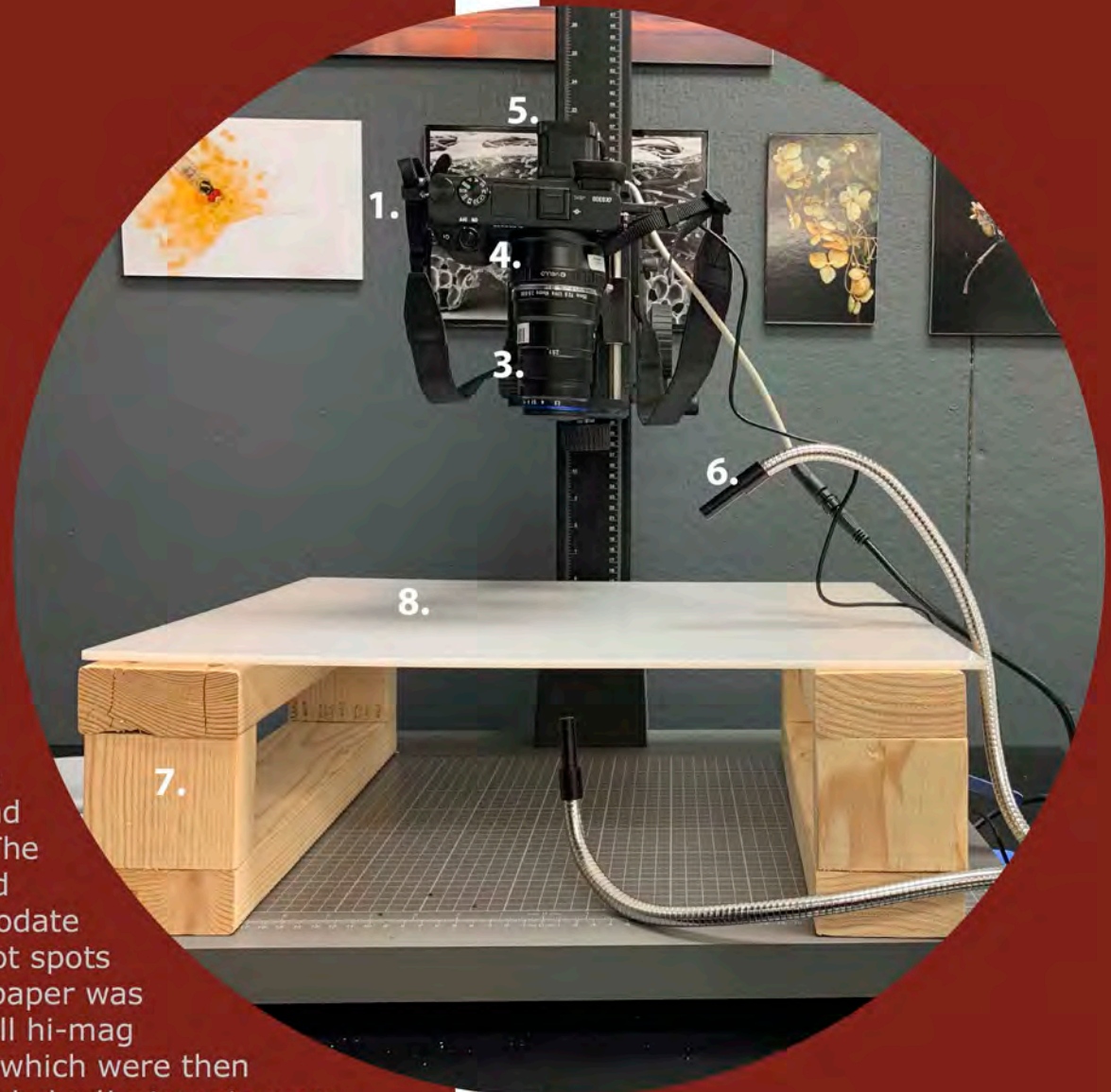
Equipment used:

1. Sony a6300
2. Sony 90 mm F/2.8 Macro Lens
3. Laowa 2.5-5x Macro Lens
4. E-Mount Adapter
5. Stack Shot
6. Fiber Optic Lights
7. Wooden boards
8. White Plexiglass
9. A piece of white paper for diffusion

Technique:

The samples were first inspected under UV light to attempt to find any fluorescent minerals within the glass. No fluorescence was found and so the shoot continued using only fiber optics to light the scene.

The wooden boards and Plexiglass were used to create a bright white background and allow for partial transillumination. The fiber optics were used at 45° angles and shifted slightly between shots to accommodate the shape of the fulgurite and reduce hot spots and peaking. When needed, a piece of paper was also used to diffuse some of the light. All hi-mag composites are stacks of 15-40 images which were then combined using Helicon Focus. Small global adjustments were made to the final images in Lightroom.



About the Photographer

Anna Yingst is a fourth year student at Rochester Institute of Technology in New York. She is graduating in May 2023 with a degree in Photographic Sciences (BS).

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Special Thanks

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References

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Above: Image captured at 1:2