

Micrometeorites



Meteors are small bits of rock and other matter within the solar system.

Occasionally these meteors enter our

atmosphere. Their surfaces are heated, causing the "shooting stars" we see occasionally. Most are small and burn up completely in the atmosphere. Occasionally they do pass through, or at least bits of them, and strike the earth's surface. These are meteorites, and can either be rocky or metallic. They are usually very small, but every so often (geologically speaking) a really big one hits, leaving a large crater like the mile wide one in Arizona.

Some meteors are so tiny that they fall through the atmosphere without burning up. They are so small in fact that they float around in the atmosphere, eventually reaching the ground with rain droplets or heavier dust particles. The best times to collect micrometeorites are after meteor showers.

Stuff you need:

- Two glass or Pyrex dishes or pans
- a magnet
- hot plate
- microscope and slides
- distilled water
- needle or pin
- small plastic or cellophane bag

Use a small glass dish, such as a glass pie pan, to collect rainwater. The dish needs to be very clean. Let it sit outdoors long enough to fill. If you don't live where it rains very much, fill the pan with distilled water and let it sit outside for a few days.

Metallic micrometeorites are usually iron or iron and nickel and can be collected with a magnet. Use a small but strong magnet and cover it with a small plastic or cellophane bag. The idea is to provide a barrier around the magnet that can be immersed in water. Sweep the covered magnet slowly through the water along the sides and bottoms of the dish. Remove the covered magnet, and place it into a second clean dish filled

with distilled water. Remove the magnet from its cover, and shake the cover in the water to loosen the particles that have (hopefully) gathered there. Evaporate the water by placing the dish on a hotplate or in a warm oven (making certain that the dish is oven safe!) Once evaporated, magnetize a straight pin or sewing needle by rubbing it one way across a magnet for a minute or so. Drag the needle across the sides and bottom of the dish. Tap the needle on to a clean microscope slide. Check the slide with the microscope to determine if a large number of particles have been gathered. If so, glue down a cover glass over the particles and examine the particles more carefully. Not everything on your slide will be a micrometeorite. In fact, it is possible that there won't be any at all. Any jagged shaped particles are likely not micrometeorites. Any rounded metallic particles may very well be.

You can also separate out non-metallic particles, though not as easily. Evaporate the original dish of water and scrape it out with a needle. Tap the needle on to a microscope slide, cover, and examine it with the microscope. Most, if not all, of the particles you see will not be micrometeorites. There may be pollen, ash, and other "dust" of terrestrial origin. If you are fortunate, you will come across a rounded stony object, which is likely to be a micrometeorite.

Sal D'Ambra adds:

"I did this as a kid and had good success collecting and melting clean fresh snow. The micromet's form nuclei for crystallization of the snow flakes. Also a magnet in a plastic bag worked great for collecting. The bag was placed inside-out around the magnet, dragged through the water from the melted snow, and turned rightside out trapping the little devils."

Thanks, Sal!

The *major* yearly meteor showers are approximately:

- January 2-3 - Quadrantids
- April 20-22 - Lyrids
- May 4-6 - Aquarids
- July 28 - Aquarids
- August 10-13 (one of the best) - Perseids
- October 8-10 - Draconids
- October 18-23 - Orionids
- November 4-6 - Taurids
- November 15-17 - Leonids
- December 10-13 (the other best) - Geminids
- December 22 - Ursids

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Last updated 4/22/98

