

## Webinar Q&A: TOUR OF NASA'S ANTARCTIC METEORITE LAB + ASTROMATERIALS 3D

#	Question	Answer(s)	Additional info
1	How many meteorites have been brought back during the last few seasons and from what field locations did they visit?	In the 2018 Season ANSMET returned 865 meteorites and in the 2019 season they returned 365 meteorites. Both of the seasons visited the Dominion Range in Antarctica.	
2	How many meteorites do you typically bring back from Antarctica each year?	Anywhere from around 200 to 1200. It really depends on the weather.	
3	Could an air shower be used by astronauts on the Moon or Mars?	An air shower would help on Mars or the Moon between the airlock and the habitat. This would help keep dust out of the living quarters.	
4	How long do you stay in the air shower?	One minute.	
5	How many NASA people typically go to Antarctica to get meteorites each year?	6-8 people usually compose a field team. Not all of them are NASA employees.	
6	Wondering about the temperature of the air blowers entering the lab....	It's room temperature.	
7	Why don't the scientists in the research lab have to wear face masks?	To follow COVID safety guidelines our team does wear masks. These photos may have been taken before Covid. In general, working in this lab does not require wearing a face mask.	
8	Is the lab kept at negative pressure?	The lab is kept at positive pressure to keep particles out.	
9	What are your gloves made out of? Teflon?	Neoprene	
10	Is this the same process as for Moon rocks? any differences?	The Moon rocks are stored and processed in Nitrogen gloveboxes. The only Apollo samples that are processed in open air are samples that have been returned from researchers.	
11	Will Kellye discuss why so many meteorites are found along the base of the mountain range as opposed to other areas of Antarctica and elsewhere?	live answered	

12	Do you use Nitrogen to keep the samples cold?	The nitrogen keeps the samples away from oxygen and moisture. It is not meant to keep them cold. The samples are, however, kept frozen until we unpackage them.	
13	I remember hearing that there were numerous buckets of meteorites that hadn't even been analyzed yet at JSC. Is that true? And if so, is it possible to involve students in a summer internship or teacher PD to embark upon the analysis?	The process for initial characterization of each season's samples generally takes 1-2 years depending on the number of samples. We try to stay current as much as possible.	
14	How can you tell that a meteorite is from a specific body, such as from Mars or the moon?	Chemically and texturally. Certain rock textures can only develop on a larger size body.	
15	Why is Antarctica the place where all the meteorites are sourced from? Is it because the frozen landscape prevents contamination of the meteorites?	Antarctica is cold and dry. This preserves the meteorites for much longer than hot, humid areas. Some of the samples have been on or in the ice for thousands of years.	Meteorites can land anywhere. Many are found in deserts and in fields.
16	Are there any other cool elements we have not known.	live answered	
17	one student is look at one of the meteorites and seeing what looks like copper, is that a metal that has been found in a meteorite?	I have not heard of, or seen, copper occurring in meteorites in our collection. Iron and nickel are much more common.	Meteorites will have areas that look rusty due to weathering because of the high amount of iron.
18	Is the reason you are so careful about having the nitrogen and keep them clean is that you're searching for extraterrestrial life?	We use nitrogen because it doesn't contaminate the meteorite and because it keeps the meteorite dry. We don't search for extraterrestrial life in meteorites in the meteorite lab, that happens in research labs.	
19	How are Mars meteorites different?	live answered	
20	Regarding my question about face masks, I was wondering why there isn't a concern about possible contamination of the samples from the exhalation of the scientists (rather than a question about Covid protection practices)?	The photos in the lab were taken pre-COVID. Today we do wear masks IF there is more than one person in the lab. We usually don't have more than two people in the lab at a time.	The flow benches and glove cabinets help prevent us from contaminating the samples with our breath.

21	How do they know it come from Mars	Noble gas measurements from the samples are a near match to those taken by the Viking lander.	
22	How many Meteorites do you have in your collection?	There are over 22,000 meteorites in the collection.	
23	What does it feel like to go through the air shower? ...what much pressure of the air flow? is it a blast, or something gentler?	live answered	
24	If you find what you believe is a meteorite, how can you confirm that it is indeed a meteorite?	The quickest way is to see if it has a fusion crust, usually a darkened area on the outside of the rock. Meteorites also tend to be magnetic because of their iron content.	
25	Are there specific places where you find the meteorite chunks or is it more general?	Dry deserts are the best place to find meteorites. They sometimes are visible because of the fusion crust, and because they don't have the same appearance of other rocks. Antarctica is one of the best places to collect meteorites because there aren't many people out there collecting them.	
26	Are there any videos of the antarctice meteorite collection process we can download?	If you search for ANSMET on YouTube, there are some great ones.	
27	Within the meteroites, are there materials that have not been identified? or cannot be identified??	live answered	
28	Does planet earth also release meteorites?	Early in Earth's formation it was impacted by other materials in the Solar System. At this time, it could have ejected materials that have landed on other planets.	
29	So I infer that the gloves never touch the meteorites, true?	We use primarily specially cleaned stainless steel tools, Teflon bags and pads, and aluminum foil for handling the samples. We avoid touching the samples with the neoprene gloves.	We wear a Teflon glove over the neoprene glove if we need to handle the meteorites.
30	Are 3D files available to educators/students to print these rocks?	That will hopefully be coming some time in the future. Stay tuned.	

31	Does Planet Earth also release meteorites?	Early in Earth's formation it was impacted by other materials in the Solar System. At this time, it could have ejected materials that have landed on other planets.	
32	Which meteorite is the most rare?	The rarer types include Brachinites, Lodranites, Winonaites, and many others. There are over 50 meteorite types and several are rare.	
33	Erika: In a picture, it looks like there is a window between the camera and the meteorite you are photographing. Is this your practice, and if so, does the window compromise the quality of the picture?	live answered	
34	Even pre-COVID, why weren't masks required? Isn't human breath a possible contaminant?	live answered	
35	How do you know it is from Vesta ?	The chemical compositions match data that came from the New Horizons spacecraft.	
36	How do we know the rock came from Vesta?	The chemical compositions match data that came from the New Horizons spacecraft.	
37	do u have meteorites that are pretty	we think they are all pretty....but Pallasites are really pretty.	
38	Do you have possession of our old friend, ALH84001?	Yes this one is in our collection.	
39	Are meteorites found where they landed, or are the meteorites deposited over millenia at the base of mountains like pebbles rolling down a stream?	The Antarctic meteorites are usually a deposit left at the base of the mountains by the nearest glacier. The glaciers act as a conveyor belt of sorts for the meteorites.	
40	How do you collect solar wind?	Solar wind was collected on the Genesis mission using special collection wafers made of different materials. <a href="https://curator.jsc.nasa.gov/">https://curator.jsc.nasa.gov/</a>	
41	What types of tools do you use to determine the mineralogy and data samples of the meteorites?	We prepare thin sections for study by researchers around the world. They use various instruments and microscopes to study the sections.	