Searching for Micrometeorites in Portland, OR.

Emma Frazier, Portland Community College Southeast Campus
What are Micrometeorites?

- Dust from outer space
- Travels through the earth's atmosphere
- A majority of the particles land in the ocean
Can Micrometeorites be found on the Rooftop?

- Jon Larsen found micrometeorites on the rooftop.
- Published a book: In Search of Stardust Amazing Micrometeorites and Their Terrestrial Imposters.
- His research was the inspiration for the research project and his book was the main sources.
Different Types of Micrometeorites

- **Tektites Spherules**
  (Image by Pinterest Geology)

- **Chondrites Spherules**
  (Image by Jon Larsen 2017)
Strategies for Collecting particles from the rooftop

- Sweeping the flat rooftop.
- Using magnet to collect magnetic particles.
- Leaving a magnet in plastic bag at bottom of rain spout.
Collecting the Samples from the rooftop

January 18, 2018 collected samples on the rooftop.

Photos by Julia Betts
How to Sort the wet samples

Filter the samples using filter paper.

Took two hours and thirty minutes to filter through.

Dry the filtered sample under 100 watt bulb.
Now that the samples are dry...

- Sieved the dry samples starting at 250 microns - 63 microns
- Used a magnet to sort the magnetic particles
Criteria for sorting through the magnetic particles

- Size is around 50um-200mm
- Magnetic
- Spherical shape
- Dark with consistent texture

(Image from Eos.org)
Observation Under the Microscope

- Sorted the magnetic particles under the microscope
- Narrowed it down to twelve possible micrometeorites
Narrowing it down to 12 candidates

Images were taken using a camera connected to Binocular Microscope.

Images by Melinda Hutson
Preparing the candidates for the SEM

- Carbon coated the twelve samples.
SEM Images of the Twelve Particles
The top candidate out of the 12 particles

- Size 100um
- Magnetic
- Spherical Shape
- Unusual texture but not consistent
EDS Results

- EDS results from the possible micrometeorite
- EDS results of a micrometeorite
  (EDS results from UW Catalyst)
To Conclude

- Spent just over 100 hours researching
- No Micrometeorite were Found
- Results leads to another question.

Does the age of the roof make a difference?
References


Acknowledgements

Dr. Eriks Puris

Dr. Melinda Hutson

Julia Betts, OSGC, PCC SE Campus representative

Jacob Reams, Lab Tech Coordinator PCC Sylvania

Cheryl Arpan, PCC Manager Environment, Health and Safety