

Evidence of Learning #5

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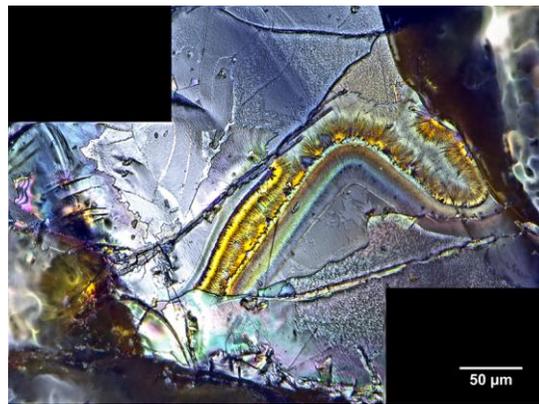
Subject: Astrobiology

Analysis:

On June 28, 1911, 40 stones rained across an Egyptian city. Scientists soon discovered that this was a very special meteorite, one that was from Mars. Most martian meteorites have been recovered from the cold desert of Antarctica but Nakhla was recovered from Egypt relatively quickly. It was then sent to special research institutions like NASA for further examinations. I have read so many research papers on Nakhla and wondered if I would ever get to look at the meteorite. That dream came true with the opportunity my mentor gave me. On March 20, I went to the Johnson Space Center to look for carbonaceous matter in Nakhla.

Just before we started working, my mentor gave me a tour of the building. NASA is not kidding when they say that they have state of the art technology. I got to see the glove box they used to look at lunar samples brought in immediately after the Apollo Landings. I then got to see the their conference room where her team gets together to discuss funding, research, etc. The award that was given to her and her team for finding the first biological signs of life on Mars was mounted on the wall. I was so grateful that Dr. Keprta is my mentor. After that, she showed all the laboratories in the Astromaterials Building. I saw the optical and fluorescence microscope lab, the laser lab, the transmission electron microscopy lab, and the

scanning electron microscopy lab. In the optical microscope lab, I looked at the world famous meteorite ALH 84001 and also Nakhla. My mentor taught me the various settings those microscopes have. Finally, I got to use the SEM. Before that, we had to give a coating of platinum for the samples so the electron on the beam could go through the meteorite, which will give us data. Once we completed that procedure, I started to examine all the regions of samples to look for organic material and areas where it showed presence of water. One feature in particular caught both my mentor and my attention.



This aspect of the sample was very weird. Dr. Keprta and I spent hours trying to figure out what this was. She told me that in the 20 years of her career, she had never seen anything like this. That just shows how amazing astrobiology is. We decided to do a chemistry analysis to see if there was any carbon, nitrogen, or oxygen because these elements are signs of biological activity. Unfortunately, I found none of that. Instead, I found lots of salt elements. This told me that this some sort of phyllosilicate (clay) that was ejected in a really unusual manner.

The first day at NASA was an amazing experience. I got to learn about the various techniques JSC Scientists use to make scientific breakthroughs.