Who are you?

Queenie Hoi Shan Chan

What do you do?

Postdoctoral research scientist at NASA Johnson Space Center

How did you get there?

As I completed my PhD in astrobiology, I fell in love with this research field and would like to continue studying the valuable extraterrestrial materials. I decided to contact Dr. Michael Zolensky (my current advisor, who is also the curator of Cosmic Dust, Stardust, and Hayabusa samples, and Space Exposed Hardware at NASA JSC) and we submitted a proposal to apply for the NASA Postdoctoral Fellowship.

What does your job entail?

My research is in the areas of biogeochemistry and astrobiology, which involves the study of the distribution of organic materials in extraterrestrial objects, characterization of the organics that are significant to the origin of life, and interpretation of the synthetic origins of the organics contained in meteorites.

We are currently examining meteorites that contain aqueous fluid inclusion-bearing halite crystals. Halite is commonly known as rock salt, and the halite crystals in our meteorite samples show a captivating blue/purple coloration which indicates the presence of colour centers (trapped electrons in anion vacancies accumulated as a result of exposure to cosmic rays). The meteorites were recovered and preserved immediately upon atmospheric entry, keeping the risk of terrestrial contamination at a minimum level. Organic compounds have been detected in the halites. We aim to characterize their organic contents, in particular the amino acid distribution. We are also studying meteoritic organics in other mineral phases, such as magnetite and carbonates.

How do you use your skills in geology and geophysics?

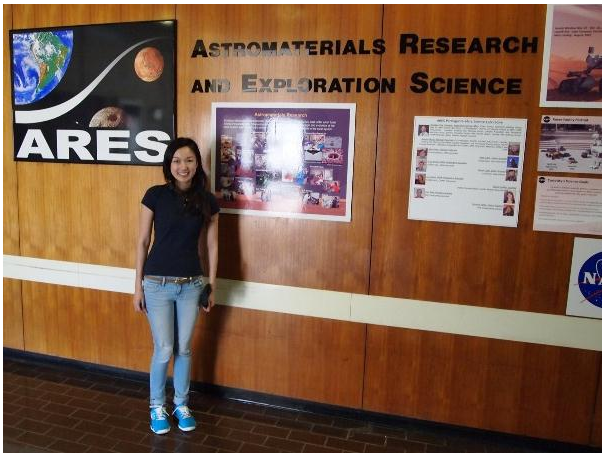
To tell apart meteorites and meteorwrongs.

My daily work on meteoritic analysis revolves around geology. Even though we are equipped with a plethora of analytical instruments that are capable of performing high precision mineralogical analyses, sometimes I still need to go back to observe thin sections under an optic microscope.

Geology skills are not confined to work. I always apply my field geology skills in leisure: map-reading while sightseeing, story-telling when next to an outcrop, and of course excellent rug sack packing skill. It is funny how I can brag about all these.

What do you love about geology?

My friends insist I did a degree in tourism instead of geology. I had the wonderful opportunities to participate in field trips to appreciate natural wonders, visiting extraordinary places that do not appear in Lonely Planet, not because they are not worth visiting, but because they are hidden wonders no



regular 5 days tightly packed sightseeing trip can invest the time to visit. In the wild nature I feel being so close to the nature, and learn to appreciate the astounding force that shapes the landscape.

What are your best/moments?

The favourite part of my work is the opportunity to work every day on studying extraterrestrial materials. My work investigates the origin of life, this is something simply intrigues me, in the same way how dinosaurs fascinate many kids and adults. I have to say I am very lucky to be able to investigate into a captivating field of science with a bunch of marvellous colleagues. The best moment working now as a postdoctoral scientist at NASA JSC is to be in close proximity to a world-class collection of meteorite samples. NASA JSC has several curation facilities that are hosts to a wide range of extraterrestrial samples including meteorites collected from Antarctica expeditions, lunar rocks and soils from the Apollo Missions, dust from comets and interstellar space returned by the Stardust mission, and asteroidal samples from the Hayabusa mission of the Japanese Aerospace Exploration Agency, etc.

Just like anybody else, my worst moments are when things do not go as expected. Sometimes the experiment did not go well, instrument decided to take its time off, but these are the best opportunity to learn. To this end, I have drawn strong inspiration from the quote by Bram Stoker — “We learn from failure, not from success”.