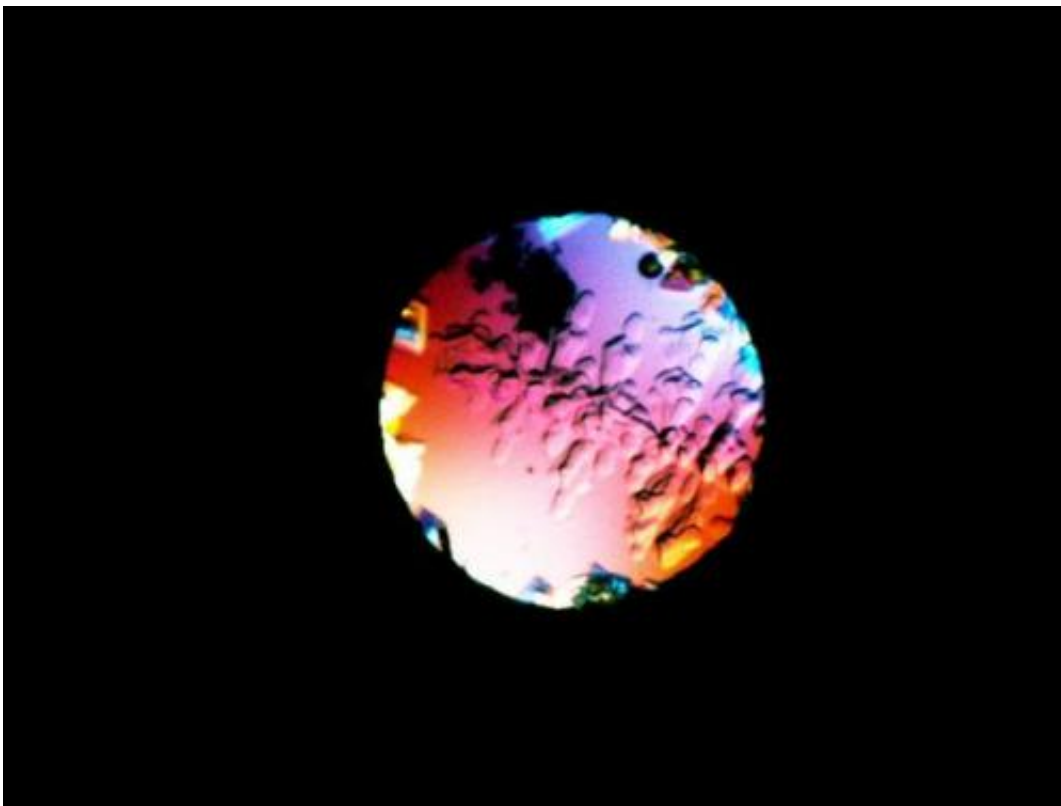


Going a long way to do a quick data collection

January 30 2015, by Helen Maynard-Casely



Look it is pretty, but it's not the crystal I was looking for.

Like many a scientist before me, I have spent this week trying to grow a crystal. I wasn't fussy, it didn't have to be a single crystal – a smush of something would have done – just as long as it had a bit of long-range order. But no. Hours spent staring at a screen as the sample I wanted to study failed to sort out its atoms into something I could work with.

Sitting, staring at an experimental failure rather does make you think about and question many things. Moving on from the 'why did I have this stupid idea in the first place' (which is a bit of a running theme in weeks like this), you try and put your experiments in context. I'm leaving Japan tomorrow, with a stack of lovely fresh data (and probably some excess baggage fees). Some of my experiments worked, some didn't - that's the nature of the beast. No amount of planning and preparation for my three months here would have probably changed that.

Actually three months of experiments (or at least access to equipment) has been a massive luxury for me. Most of my data collections are from central facility instruments, like those offered at the [Australian Synchrotron](#) and the [Bragg Institute](#). Access to these instruments can take a lot of preparation, starting with a peer-reviewed proposal. Then, if you're fortunate enough to be granted time; months of planning, risk assessments and gathering of equipment go into perhaps 24 hours of precious time on the instrument of your desire.

But what if you've put in YEARS of planning, and then had to wait YEARS for a tiny window of results? What if, rather than heading to Japan, you've had to journey to Pluto for them? How excited would you be that your tiny window of observation was just coming up? It's a good job I'm not on the science team for New Horizons, as I couldn't quite image how I'd sleep from now until July.



How far away is Pluto. Very. Credit: NSW, Australia Andy Casely

I feel a bit of affinity with New Horizons, as we're both about the same amount of time into our research careers (after probably a similar amount time of building/planning for New Horizons and growing/educating for me). When it launched in January 2006 I was few months into my PhD, and at that point I probably felt that I was being propelled at nearly the velocity New Horizons' was.

New Horizons did get to see a bit of the solar system on its journey, in 2007 while winding up it's speed in a gravity assist orbit, it did a tour of Jupiter. There it took some rather wonderful images of the [gas giant planet](#) and it's rings, and even caught an eruption of the [Tvashtar volcano on Io](#). But since then it's largely been in hibernation, waiting for 2015 for it's time to shine.

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(I, on the other hand, have not been asleep since 2007 I should point out!)

When New Horizons reaches its closest approach to Pluto some of its instruments will only have a matter of hours to observe the surface of the icy dwarf. How do you possibly prepare for a window like that? Well we have some idea, ESA's Philae lander had a similarly restricted timeline and like New Horizons' years of planning from vast teams of scientists and engineers will have gone into the small observation window. Even once the observations are done, planned down to the seconds, it will be a nervous wait for the results. Not wanting to waste a second of observation, New Horizons will wait until it is past Pluto to send its data bounty back to Earth, a process that will take months after it has flown by.

But, like for me in Japan, the Pluto flyby will only be a step in New Horizons science journey. [From there it will continue to fling its way out of the solar system](#) and the hope is that it will encounter a number of other Kuiper belt objects. We really don't know much about the whole class of icy dwarf planets, and for me the excitement lies in what new icy geology is there to be explored. I can't wait to see what materials and in what situations New Horizons turns up on the surface of Pluto and its moon Charon. That'll be the start of my next (hopefully more successful) experimental adventure.

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Citation: Going a long way to do a quick data collection (2015, January 30) retrieved 4 June 2024 from <https://phys.org/news/2015-01-quick.html>

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