Getting a reaction 100 ways to reach out

Dave Sammut was thrilled to share a set with two of his science heroes while filming experiments for the RACI Centenary project 100 Reactions in 100 Days.

From the youngest age, I loved what science had to offer me. Beyond learning, science was inspiration, and imagination. The RACI's Centenary project '100 Reactions in 100 Days' has allowed me to fulfil the dreams of a little boy who sat glued to the television through the peak of the *Curiosity Show* years (see box). As it was for so many budding scientists of my generation, hosts Dr Rob Morrison and Dr Deane Hutton (pictured above) fanned the flames of my early science interest.

The project

Led by Dr Nathan Kilah of the University of Tasmania, the RACI's 100 Reactions in 100 Days seeks to create engaging YouTube content for the newest generation of scientific minds. The videos are being created by RACI scientists around Australia, often just with webcam and smartphone.

It's an opportunity for our members 'to celebrate the centenary, to highlight your work, and to demonstrate your outreach abilities to a global audience'. Aiming at a wide audience,

the project invites members to create videos up to five minutes long, 'with a focus on inspiring engagement and enthusiasm for chemistry' (www.raci.org.au/raci-news/100).

From the first email invitation to members, I was enthusiastic about the project. I put the resources of the team at my organisation, DCS Technical, behind it, and we got to work on developing our contribution to the project.

My starting point was to reach out to Dr Rob Morrison. Rob had written some columns for *Chemistry in Australia* a few years ago (2009–2012). At the time, I had sent Rob a 'fan boy' email, and he had been generous enough to reply.

Rob responded to my invitation immediately and enthusiastically, on behalf of both himself and Deane. I was transported. The idea that I could collaborate with my childhood heroes was a gift to my younger self that I would never have dared to dream of.

Creating content

In consultation with Nathan Kilah (keeper of the master list of experiments, to minimise duplications), we prepared a list of 10 experiments for the project. There are so many experiment options that are interesting and highly visual, and I was delighted with Rob and Deane's idea to reprise a couple of the experiments from the *Curiosity Show* days.

We eventually settled on experiments with acid–base chemistry (dissolving egg shells, and creating 'rubber bones'), gases (helium and liquid nitrogen) and a couple of spectacular flame experiments with hydrogen generation and firework chemistry. The full set is available on the RACI's YouTube channel.

We reached out to other scientists and institutions, to see who wanted to collaborate. So many people have put up their hands to volunteer space, resources and support, it was gratifying to receive such enthusiasm – with that enthusiasm all the greater when we mentioned Rob and Deane's involvement.

The challenge was not in finding support, but in finding mutually compatible dates to bring all the offered resources together. It was a logistical exercise, but eventually the team was brought together for two days of filming in May 2017.

The shoot

The team and I went a bit overboard. If we were going to film with the professionals, then we were going to try to make a professional showing of ourselves. As we say in 'the biz' – do not try this at home.

The shoot, involving about 10 people, was organised for three locations over two days: the National Measurement Institute and Fledge Innovation Labs at the joint CSIRO site at Lindfield, New South Wales, and at University of Technology, Sydney.

Our volunteer video professional brought enough cameras so that we would shoot everything simultaneously – the wide shots, the 'talking head', the close-ups, even a 'go pro' camera taped to the ceiling. That made filming considerably simpler, because we didn't have to repeat the reactions to get the different views. There was lighting. There were microphones. It was an electricity utility's dream.

For each experiment, we started with a series of rehearsals, testing the sequence and timing of the actions, and giving the camera crew an

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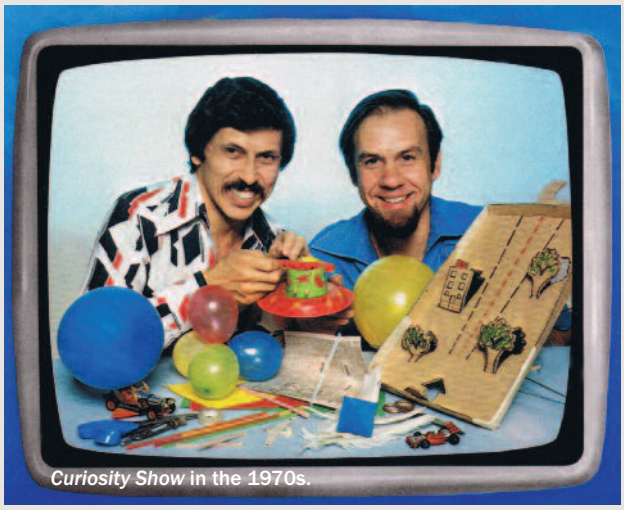
Curiosity Show

Curiosity Show was a seminal Australian science-based program broadcast from 1972 to 1990, and it now lives on at YouTube.



Curiosity Show in the 1970s.

The *Curiosity Show* website states that the show '… was a nationally broadcast science and technology television program for young people, including segments on natural history, astronomy, music, technology and puzzles. It is remembered for its emphasis on how to make working machines and models from everyday materials around the home. More than 500 programs were produced, with a total of around 5000 segments'.

The show could be likened to the American series *Mythbusters*, with fewer explosions and more science. Anecdotally, the creator of *Mythbusters*, producer Peter Rees, was a fan of *Curiosity Show* during his formative years growing up in Sydney.

After the end of *Curiosity Show*, Rob and Deane have continued to be active in science communications, with extensive science writing and speaking engagements that continue to this day.

opportunity to adjust and optimise their shots and angles. Then being relatively well prepared, we could film most of the experiments in just a couple of takes.

And so filming began. Deane was the first on the schedule, and hearing him say the immortal words 'Why did this happen? I'm glad you asked!' was a nostalgic thunderbolt.

Even though we were relatively well organised, the filming of each 3–5-minute video took more than an hour. And that was when everything went well. We lost quite a bit of time on the first day of the shoot when things went awry.

In shooting the fireworks chemistry video, we made a last-minute decision with our hosts to change the order of filming. It seemed a good idea to use the darker of two rooms available to us, to better bring out the visuals as we discussed the way different metals are used to generate colours in fireworks. Rob was using cornflour as the carrier, then mixing various metal powders and 'puffing' them into a flame. The resulting flash was spectacular, with a small associated puff of smoke and dust. It was all safe and benign, but hindsight provides wonderful clarity, and in hindsight the better-ventilated room would have been the better choice.

We'd made it through the rehearsal and most of the filming. As Rob opened his mouth to say the final line in the script '… and now we'd better stop, before we set the fire alarms off', the wailing began. I'd like to take this opportunity to reiterate our apology to the professional scientists of NMI and CSIRO for the interruption to their day.

Throughout the shoot, it was wonderful to see how many established scientists clustered outside at each location, whispering excitedly while waiting for an opportunity to say hello and 'thanks for everything you did'. Rob said that it can be a little sobering when a middle-aged person enthuses about what a fan they were as they grew up, but there were plenty of examples of that during the two days of filming. The sense of fun and the underlying admiration were abundantly evident throughout the experience.

The highlight for me was the opportunity to actually get on camera with my heroes. My acting was terrible. I forgot my lines. I stood there

Dr Rob Morrison filming at the National Measurement Institute.

Dr Deane Hutton preparing to film at Fledge Innovation Labs, with Dave Sammut just happy to be there.

grinning like an idiot, just thrilled to be there. And I don't mind any of that. I was living the dream. So where do I audition for *Mythbusters*?

Getting involved

I've written this piece because I'd like to encourage you to create something of your own, and because it was so much fun to do that I just have to tell *somebody*.

RACI members around Australia still have time to get involved. 100 Reactions in 100 Days will be extensively promoted during National Science Week (12–20 August), with some awards for the best student film. Please contact Nathan Kilah (nathan.kilah@utas.edu.au) to talk about ideas.

Here is what I learned during filming.

- You don't have to do a full professional shoot. A webcam or mobile phone is fine.
- Planning is critical. From location, to resources, to script, know what you intend to do and what's required.
- Pay attention to lighting. Have enough natural and warm light to bring the video to life.
- Ideally, have a reasonably uncomplicated backdrop. Try not to make the shot too 'busy'.
- Eliminate background sound and distractions.
- Have a rehearsal, and run through the experiment a few times so that the whole crew is familiar with the sequence.
- Consider mixing up your views – close up, wide, 'talking head', overhead, whatever makes the final product more dynamic and interesting.
- Even basic editing takes a lot of time – hours per minute of video – but the results are definitely worthwhile.

Dave Sammut FRACI CChem is principal of DCS Technical, a boutique scientific consultancy providing services to the Australian and international minerals, waste recycling and general scientific industries.
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