

# A day in the life of a **Rocket Scientist**

OK let me start with a confession. I don't actually build rockets. Rather I develop magnetometer experiments for satellites that sit on top of rockets! But I've been called a rocket scientist too many times to remember and I've seen plenty of spacecraft up close and personal over the years.

My job is a mixture of mission specific hardware builds and research into new magnetic sensing technologies. The magnetic field is a fundamental parameter in outer space. It tells us, for example, how the plasma streaming from the sun in the form of the solar wind interacts with the Earth's magnetic field, resulting in the Northern Lights.

Usually the morning will start with a review of the overnight emails reporting the status of our instruments in-flight. These reports are critical because if there are problems we need to engage with the Operations Centre to address them via telecommand. Fortunately this is a fairly rare occurrence even though the space environment is tough – low pressure vacuum, thermal extremes, ionising radiation. It's one of the reasons why project cycles can be of the order of twenty years – you design, build and test, test, test.

Following this we will have a range of meetings or tele-conferences on active hardware developments. Many days are spent on mission either at industrial sites, space agencies or other universities. This business is definitely for you if you like to travel. Although with strict launch deadlines it can sometimes mean some very long hours. But it's a very satisfying feeling to see the rocket on a launch pad, knowing your kit is about to be blasted into space.

In the early afternoon I'll spend some time in the lab. One current area of interest is tiny magnetometers based on magneto-resistance. The 2007 Nobel prize for Physics was awarded for work in this field and applications are a hot topic. In the late afternoon it's back to the PC, usually a proposal, paper or interface deadline has appeared in my calendar.

We even hope to launch or own spacecraft in the near future. A small CubeSat, only 1kg and so small you can hold it in the palm of your hand. We have several MSci students working on this project and it represents a perfect opportunity for test flight of our new magneto-resistive sensors. Our own spacecraft in outer space - then I could call myself a real rocket scientist.

## **Patrick Brown**



Patrick Brown (third from left) and colleagues checking the Double Star spacecraft flight path during magnetometer commissioning.



Patrick Brown (facing camera) on mission during magnetometer commissioning on the Double Star spacecraft at CSSAR, Beijing. Patrick graduated from Trinity College Dublin with a B.A. (Mod) in Experimental Physics followed by a M.Sc. in permanent magnetism.

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