



Student: Rebecca Watkins

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Placement: Hilger Crystals

Role: Updating and integrating product test data from several sources

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Describe a typical day?

Hilger Crystals grows and sells synthetic crystals to various clients for use in Infrared Spectroscopy and X- and gamma ray detection. I was tasked to create a database to record information at each stage of the manufacturing process of a crystal to analyse the various factors that contribute to the desired ‘afterglow’. If you expose a crystal to X-rays, light is emitted. When you shut off the X-rays you would expect to see no light; however, a small % of light is still emitted and this is afterglow.

I talked to different members of staff to understand the full manufacturing process. This helped me to design the database to include the necessary information and be as user-friendly as possible. I created report forms so users could create reports on a regular basis and look at trends when working on improving methods to reduce afterglow.

How do you think this placement has benefited you for the future?

The project required me to be self-motivated, which I thoroughly enjoyed. It gave me the opportunity to teach myself Microsoft Access to an advanced level, using VBA (a coding language). I improved my ability to communicate with different members of staff while trying to create a user-friendly database, which is a huge improvement on the current system and will save time in the future. Access is a brilliant tool, applicable to a variety of industries, so this new skill will be very useful in the future.

What are your next steps?

I will keep an open mind about which area of physics I would like to pursue. I didn’t previously have an interest in material physics but found that the growth and effects of different methods of growth/processing on crystals highly fascinating. It was also exciting to learn about a field of physics where there is limited scientific understanding.

Employer perspective:

This was a very important project for the company as we are developing a range of specialised fast X-ray detectors. We needed a way to capture and analyse all the parameters that we think affect product quality. A database seems the best route as it can be adapted to individual reporting criteria and have multiple simultaneous inputs.