

A day in the life of a **Laser Physicist**

I work as a Senior Laser Engineer in the Technology Development Group of Xsil Ltd. Xsil is an Irish company, just five years old, that designs and builds laser machining tools for the semiconductor industry.

9.00am – My typical day starts with a project planning meeting to ensure that my team and I are clear on what we need to do for the day. We discuss problems or issues encountered in the previous day and talk about the work plan for the current day.

My job is to investigate new laser processes for our existing and potential semiconductor customers. This involves determining what type of laser, and laser conditions, to use on different types of customer wafers. Our customers typically manufacture computer chips and memory devices. Amongst other work we machine small features such as holes, trenches and slots on such device wafers.

10.00am, the engineers working for me start processing work in the lab. This is work I did when I first started in Xsil. It involves a series of experimental tests to determine the optimum laser conditions for machining a particular customer sample. We change parameters such as laser beam size, laser focus, laser repetition frequency, laser wavelength and laser pulse energy in order to determine the optimum machining conditions. After machining we conduct tests using an optical microscope in order to assess the quality of the laser machined features. At any one time our group could be processing samples for three or four semiconductor customers. Our group forms a subsection within the Technology Development Group, which consists of approximately 20 people.

Throughout the day I pop in and out of the lab to see how things are going, discuss progress and analyse samples that have been machined. Once we have decided on a suitable process I will write a report for our customer that details our experimental results and provides a detailed analysis of the features we have machined.

Other aspects of my job include visiting customers to see how their laser tool is performing and assist in their process development work on-site if required. This involves travelling within Europe, the US and Asia for a short visit, or sometimes several weeks, depending on the customer requirements.

A few times a year I visit laser vendors to perform sample testing with some of their new prototype systems to assess if we can expand our customer base by integrating a new laser with different performance characteristics onto a new version of our machine.

The day draws to a close with most problems ironed out and I start to think about tomorrow, which includes a visit to a potential customer to assess their application. I'll have to decide if technically our machines can perform to their conditions or if we need to alter our tool/laser process in order to meet their requirements.

Oonagh Meighan

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Oonagh Meighan at work (seated) at the optical microscope, analysing laser machined samples. Oonagh graduated with a degree in Applied Physics and a PhD in Experimental Physics from Dublin City University.