Welcome to Fascination, a fortnightly behind the scenes look at our labs, facilities and funded research. This edition looks at our extensive work with lasers.

**Vulcan laser zaps its way to a world record**

You may not have heard of T-rays, but they are used for everything from airport security to medical scans. Scientists at the Central Laser Facility (CLF) have set a world record for the highest energy T-ray pulse using the Vulcan laser – potentially providing new ways to explore the very extremes of physics.

**Zooming in at the molecular level**

Plant and animal bacteria cells can be seen in sharper focus thanks to a new technique being used in light microscopes at the OCTOPUS imaging cluster, offering a simple and inexpensive way of investigating cell biology.
Insights from the CLF

The CLF, based at our Rutherford Appleton Laboratory, has been lighting the way for laser research, development and training for over 40 years. Discover a brief history of lasers, how they work and what they are used for with our series of laser videos.

Smaller, faster, cheaper!

As particle accelerators get larger, and particle physicists seek ever-higher energies for their particle beams, an international team of researchers is experimenting with a radical new design for future accelerators, and it involves a laser!

How to supercharge the ultimate X-ray machine

X-rays are great at looking deep inside stuff, but laser-driven X-rays are even better. Now, Chris Armstrong, a PhD student working at the CLF, has developed an ingenious technique that makes the ultimate X-ray machine even more powerful.

Using lasers to understand DNA

All of our cells contain DNA, and when DNA is damaged it can lead to diseases such as cancer. We’ve used this video for a while in our schools resources but Dr Stan Botchway explains very clearly how we are using lasers to break DNA as a way to make cancer cells die.
In recognition of International Women's Day on 8 March, we spoke to a number of women who work at the CLF about their roles and research at the facility, as well as their routes into laser science as a career. From apprentices just starting out, to senior experimental scientists, they are all making a difference to the work we do within the CLF.

The OCTOPUS imaging cluster @CLF_STFC has included investigations into DNA damage, cancer cell therapy and plant metabolism. Read more here.

Artemis is the facility for extreme ultraviolet science. Research includes ultra-fast electron dynamics in condensed matter and gas-phase molecules. Read more here.

Vulcan - the god of fire! A great character to represent one of the world’s most powerful lasers @CLF_STFC. Read more here.

In 2007, the Gemini facility became the first in the world to provide a dual-beam system of high power, super-intense light. Read more here.

Read More