

OPTICS AND PHOTONICS WITH DR ALEXIS VOGT

TALKING POINTS:

- 1) 75% of small and mid-sized German companies report that their shortage of skilled workers in the area of optics inhibits their ability to innovate. What exactly does that mean? What are some famous German companies and what do they manufacture? (See *What's the issue?* p1)
- 2) The article mentions national security as an important application of optics-based technology. Can you think of some possible ways in which optics-based technologies may be used in this area? (See *Whether it's telecommunications...*, p1)
- 3) Other than going to university, why are apprenticeships and traineeships/training programmes so important? (See *What does OPT-IN! do differently?* p1)
- 4) In the article, Alexis uses an analogy (a comparison) to differentiate between optics and photonics. Can you come up with another suitable analogy? (See *About Optics and Photonics*, p2)
- 6) If you wanted to study or work in optics, what qualities could you develop now? (See *What skills and passions do you need?* p3)
- 6) The article mentions using light to manoeuvre DNA. What is DNA? To find out how DNA can be manoeuvred, read 'Nanoscience at your fingertips', University of Bristol: <https://www.bristol.ac.uk/news/2009/6679.html> (See *Why do we need photonics and optics experts?* p3)

ACTIVITIES YOU CAN DO AT SCHOOL, COLLEGE OR AT HOME

THE WONDERFUL WORLD OF OPTICS

There are many exciting applications of optics and photonics. The UK Institute of Physics has published an excellent document entitled, 'Optics and photonics: Physics enhancing our lives' which outlines some of them. Research one application and write a news report, blog or vlog about it. You could even conduct an 'interview' with a friend or family member.

https://www.iop.org/publications/iop/2009/file_38206.pdf

A DAY WITHOUT PHOTONICS – A MODERN HORROR STORY?

Imagine if you didn't have a smart phone, video games, internet access or access to music streaming sites. The International Society for Optics and Photonics (SPIE) can send you a free video on DVD, which shows you just how much of a nightmare this could be: <http://spie.org/education/education-outreach-resources/free-multimedia>

SOME SIMPLE OPTICS EXPERIMENTS

Make your own telescope, light fountain, shimmering lenses and much more with Optics 4 Kids, which is aimed at 5-18-year olds: <https://www.optics4kids.org/classroom-activities>

Have you heard of a pinhole camera? It's possible to watch a solar eclipse through a pinhole camera and NASA's Jet Propulsion Laboratory at the California Institute of Technology shows you how to make one. Check out their website and see if you can create one yourself: <https://go.nasa.gov/2qjJnnc>