Project 1

Emission competition

Analytical chemistry in Ireland

rsc.li/3p00LfI

Why do scientists collect data?

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Find student and teacher support and the full project outline at https://rsc.li/3p00LfI

Suggested activity

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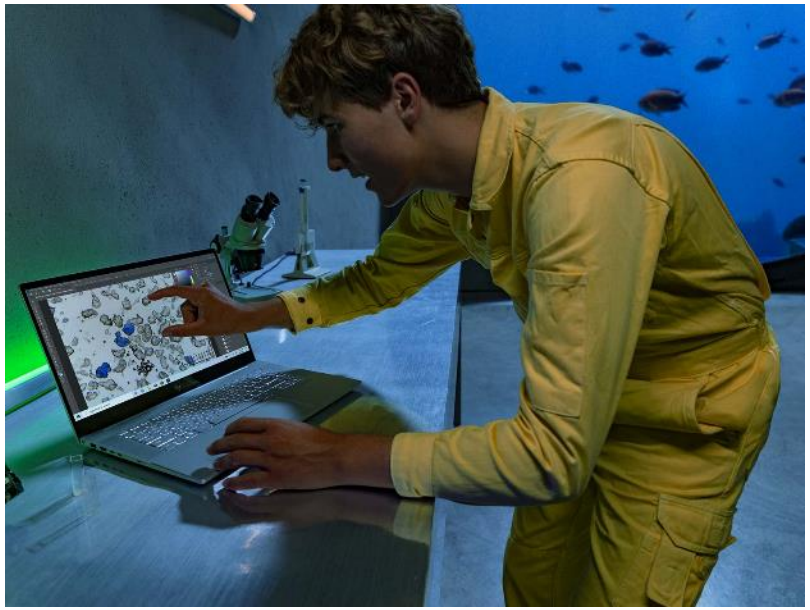
1. What are the different ways scientists can record data?
2. What are the best ways to present data?
3. How can we remain unbiased?
4. How do we know what the sun and stars are made of?

Recording your own data

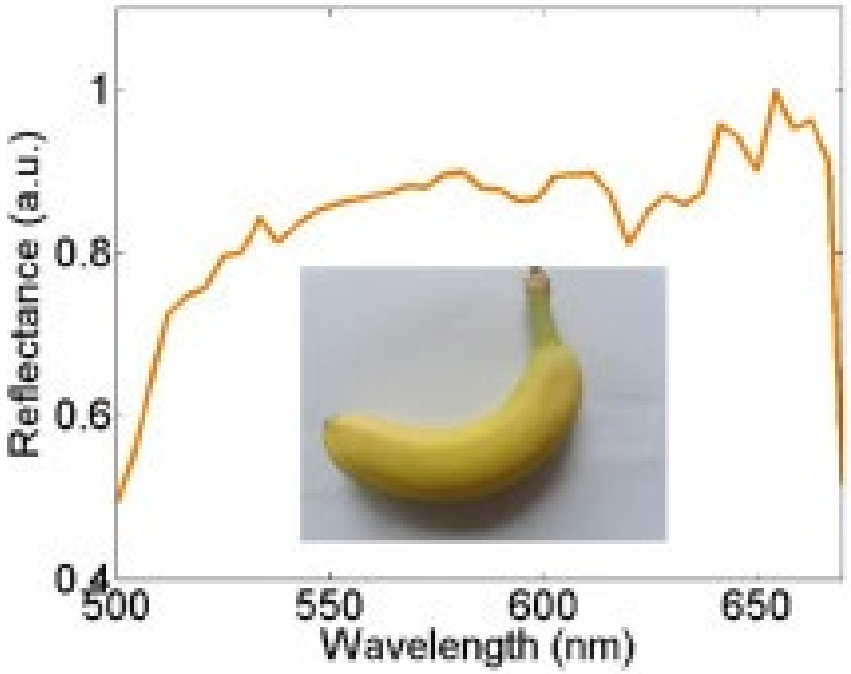


Reproduced with permission from Fionn Ferreira

- Fionn Ferreira is a 20-year-old from West Cork, who won the Google Science Fair 2019 (plus $50,000) for his investigation into the removal of ocean microplastics.
- To collect the results for his investigation he built his own spectrometer and used online software to process his results.

Watch a video of his prize-winning invention here

Bio-sample sensing



- Pencil-like imaging spectrometry has been used successfully to monitor the chlorophyll content in fruit through spectral images as a measurement of the fruit's ripeness.
- This equipment could be made for less than $300 and will connect wirelessly to your mobile phone and has the potential for medical diagnostics in the future.

Image from F Cai *et al, Biomed. Opt. Express,* 2017, **8**, 5427-5436

Instrumentation in Ireland

Edward Everson works at Kerry group and he tells us about a very interesting time when his team used a variety of spectroscopic techniques to get to the bottom of a food related mystery.

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Reproduced with permission from Finn O'Fearghail

Finn O'Fearghail, a postgraduate researcher at TU Dublin, tells us about his exciting research on bio-plastics and how they use spectroscopy to determine the purity and quality of their bio plastic alternatives and to measure the efficiency of the extraction processes.

Spectral imaging – finding out what things are made of

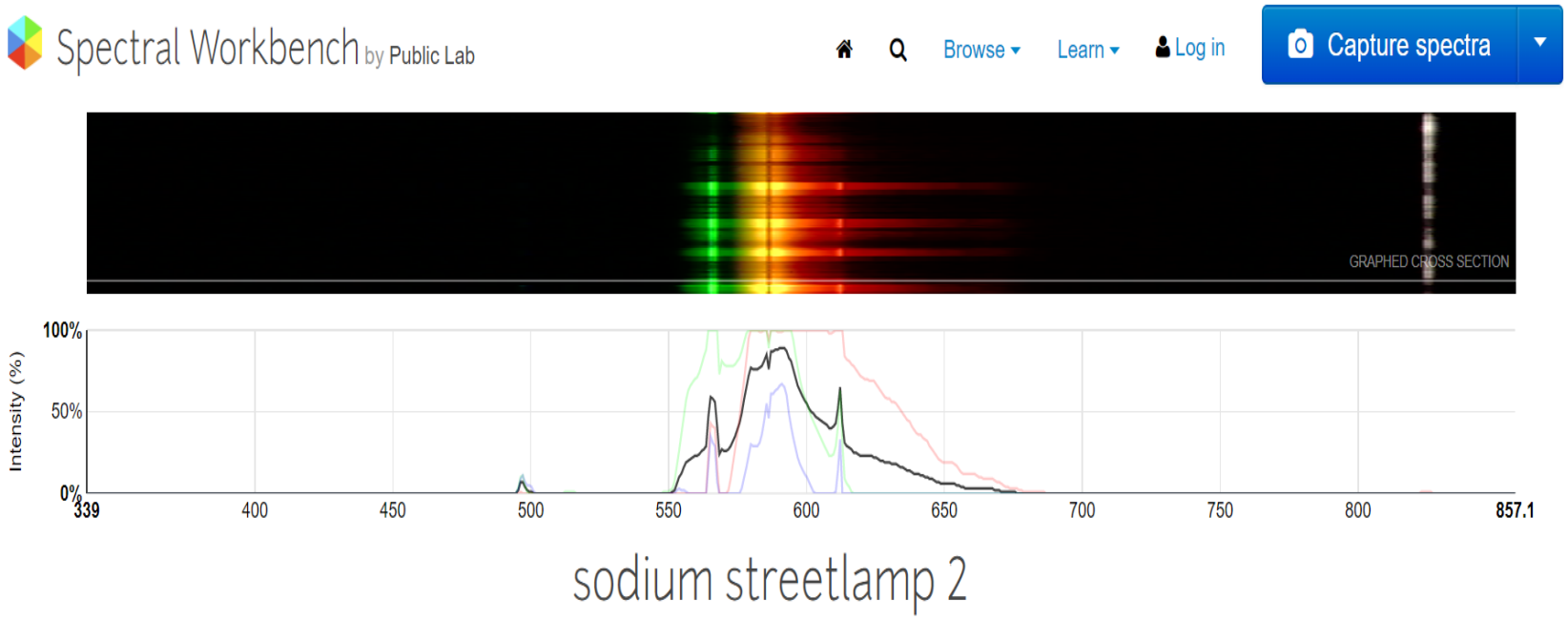

Image from Spectral Workbench sodium streetlamp 2, https://spectralworkbench.org/spectrums/56511 (accessed October 2021)

Acknowledgments

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To find out more about SFI's Smart Futures and STEM careers resources for students, teachers and parents, please visit smartfutures.ie

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