



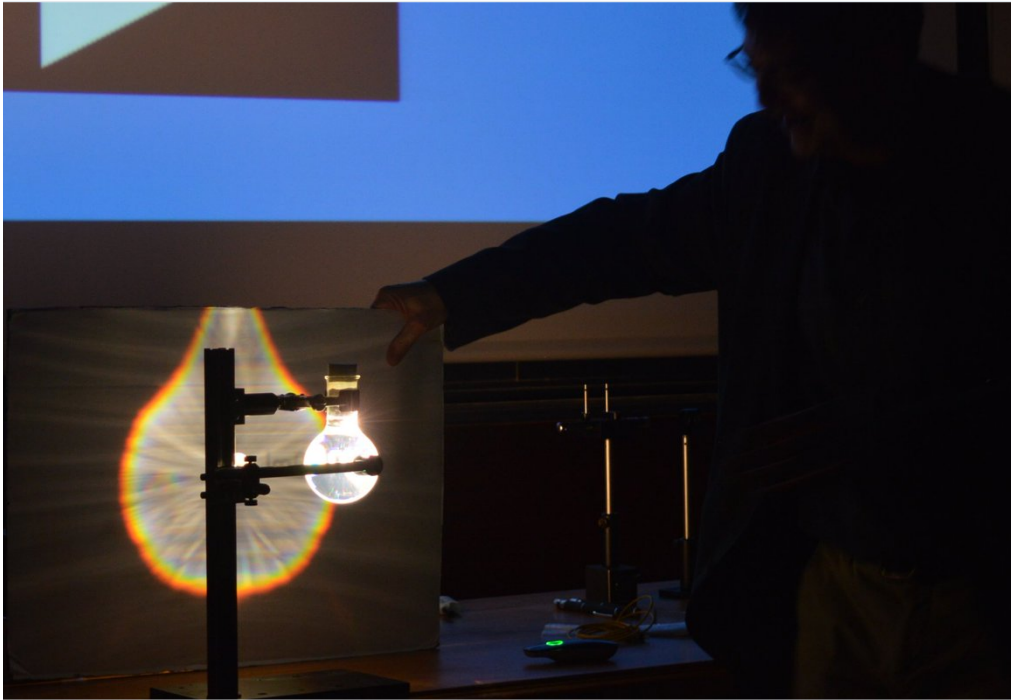
**John Dudley** @johnmdudley

Dec 4, 2019 · 18 tweets · [johnmdudley/status/1202168946696376330](https://twitter.com/johnmdudley/status/1202168946696376330)

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As promised a thread (17 tweets) with a selection of photos from the Live Science lecture last night. 200 students, 25+ demos & a team of 7 to setup. Thanks to [@CocoLapre](#) for the photos & a full list of thanks to everyone is at the end. First up dispersion & rainbows.





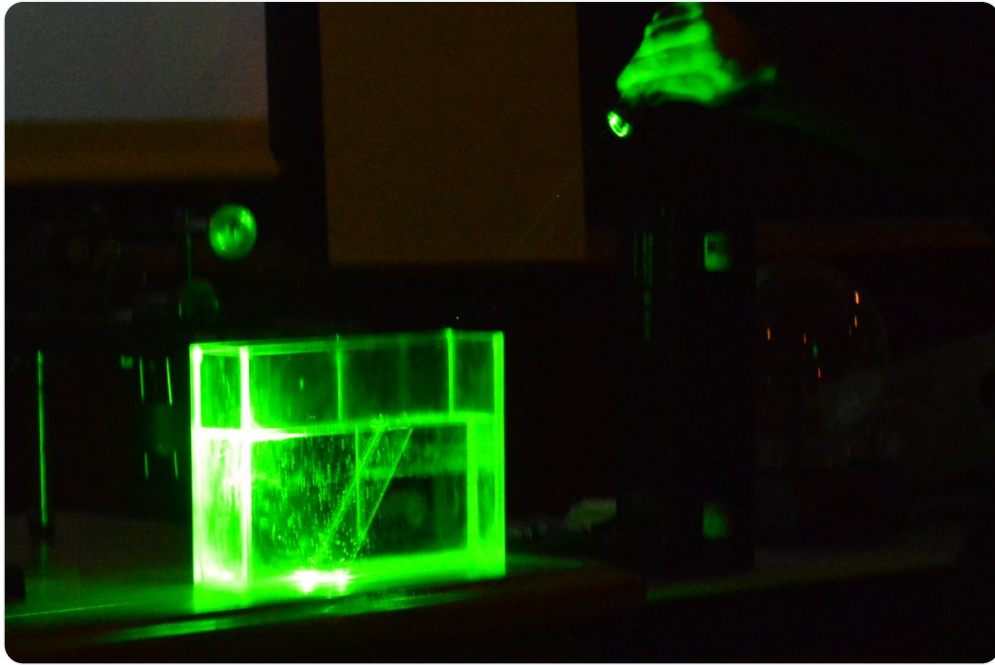
After breaking up white light, we put it back together. Great chance to talk about how flat screen displays work at this point.



Geometrical optics can be fun! Make a lens at home from a glass of water. A simple USB document camera allows you to project these experiments so everyone can see.

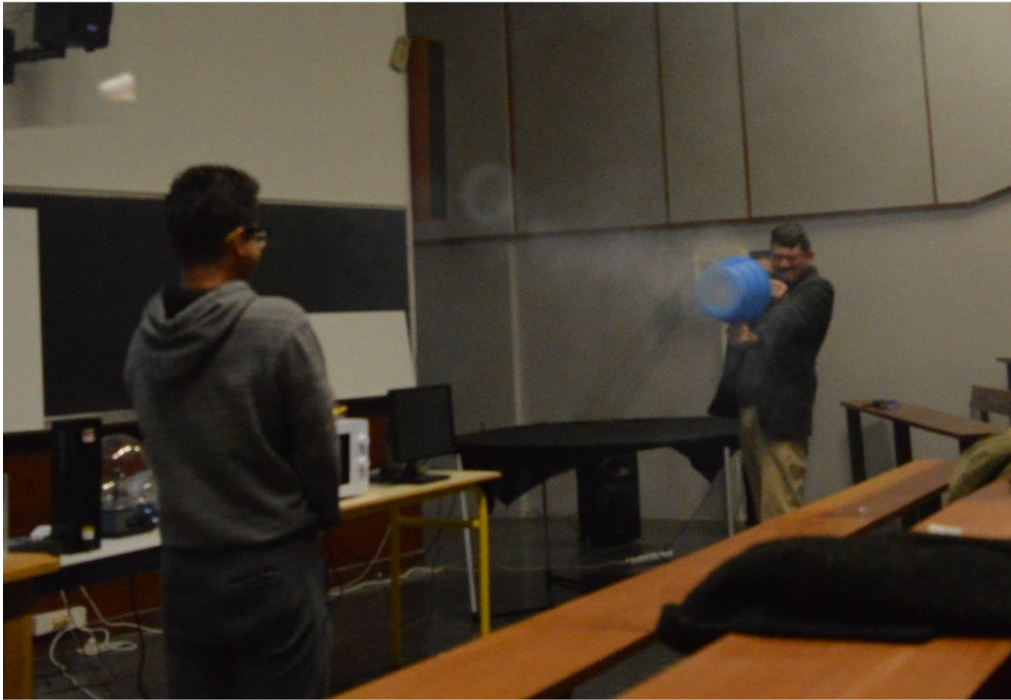


The basics of reflection, refraction, Snell-Descartes and Total Internal Reflection are easily explained with a small tank of water and a laser pointer. With the lights out it is visible even at the back.



Talking about waves in general allows you to have fun with a vortex cannon. Before and After pics below - a fantastic photo capture from [@CocoLapre](#) here!





Light is an electromagnetic wave, so let's talk about electricity. A Van der Graaf with Aluminium pie plates is always fun!



A hair-raising experience though for volunteer [@solene paul](#) who seemed rather surprised at the power of static electricity!



Magnetic levitation is always a crowd pleaser. This demo requires patience and practice to be able to do live though! Project on a screen with a USB camera as well.





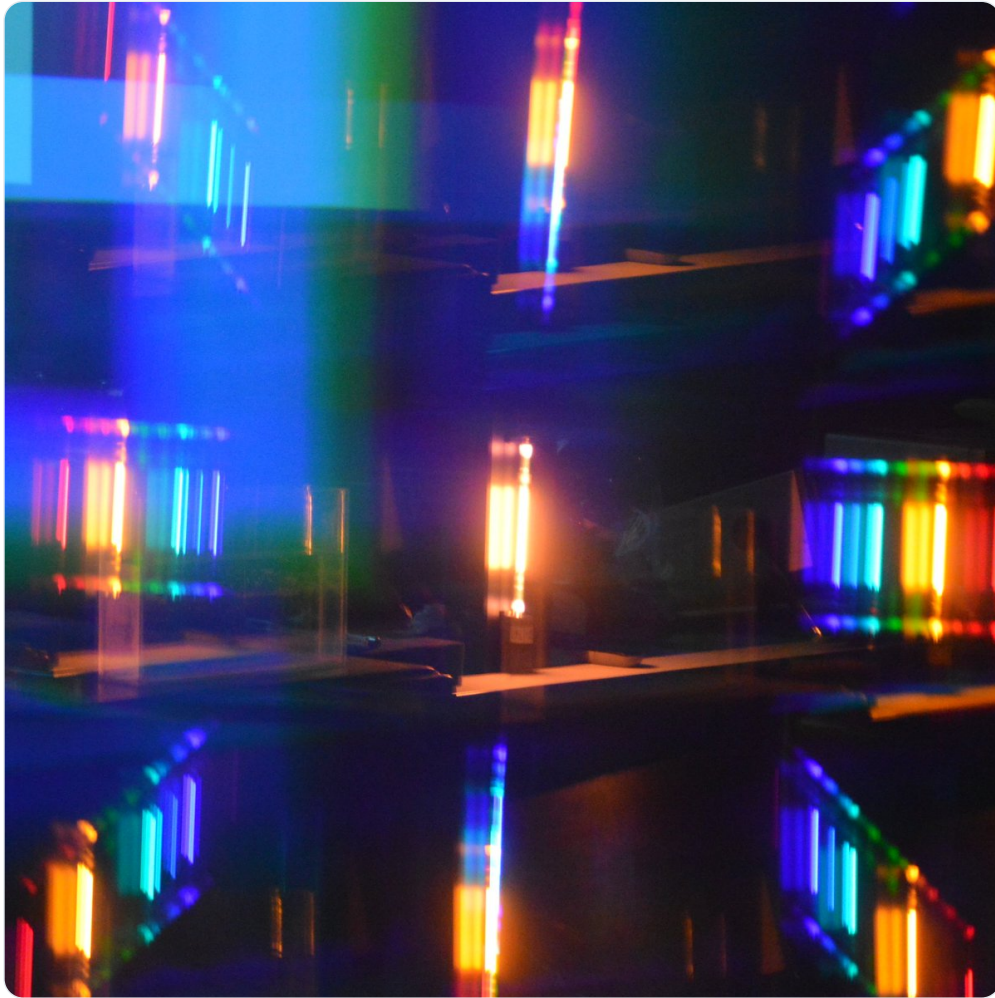




Electromagnetic waves and polarization are subjects that go together naturally. Science meets Art using simply a monitor, some scotch tape and a polarizer. Talk about Klee if you want!



Hand out diffraction-grating glasses (get them from [@SPIEtweets](#) or [@ArborSci](#) for example) and watch a lecture hall full of first year students see quantum mechanics with their own eyes!

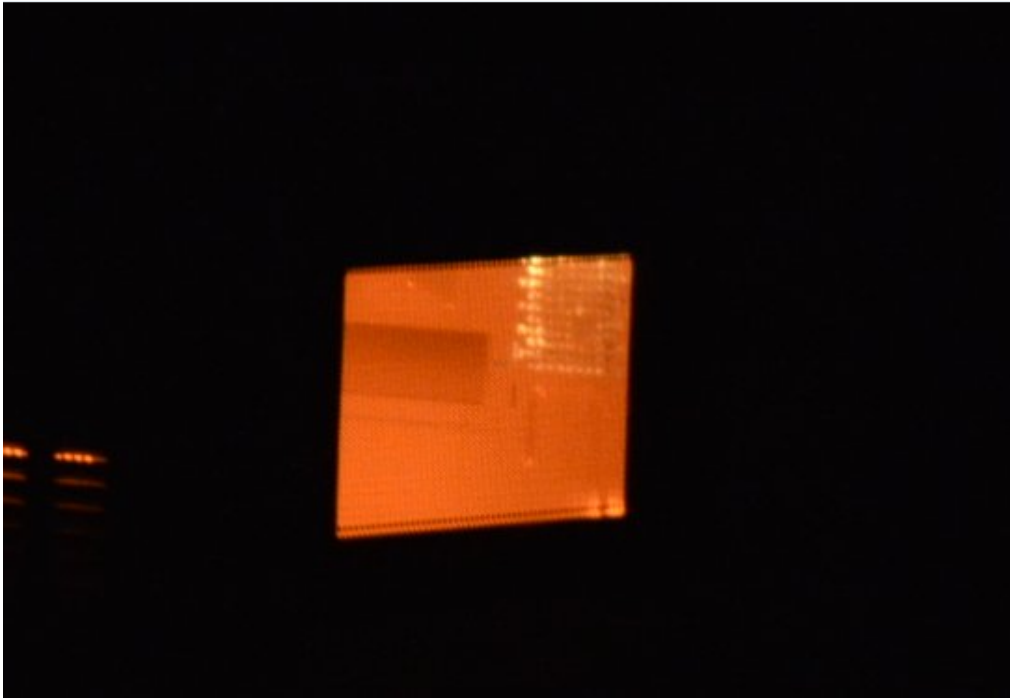


Exploring the electromagnetic spectrum & talking about photons is an easy introduction to UV and fluorescence. Coloured glass, olive oil and tonic water are easy to obtain and extremely impressive under UV illumination!



A new demo for this year inspired by [@AaronSlepkov](#) was plasma generation in a microwave using cut grapes. It worked really well and was visible even at the back of a large lecture hall. Amazingly bright when it gets going!





Lighting a fluorescent tube from the external E-field leaking from a plasma ball has so much physics in it! Great to do with student volunteers. Thanks again [@SolenePaul](#)



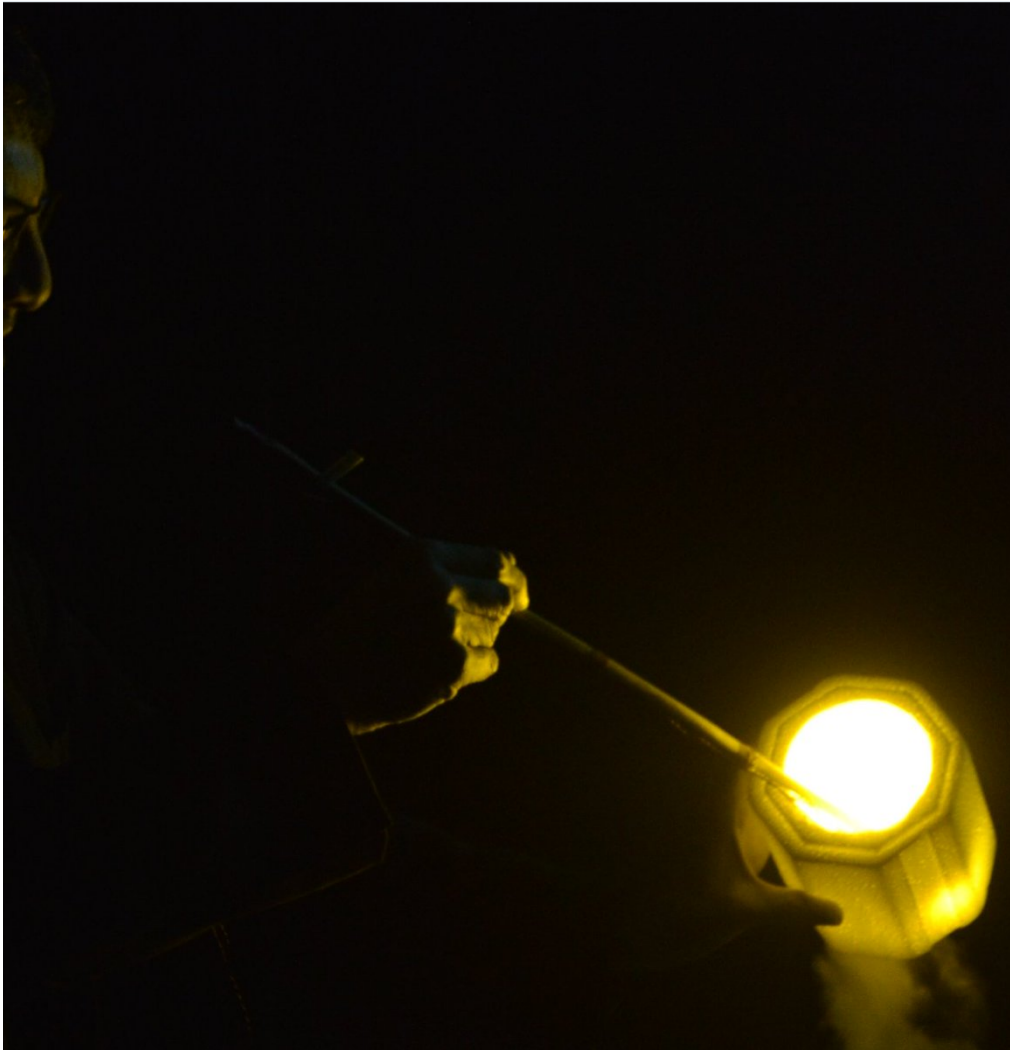
And of course liquid Nitrogen is always fun. First discuss states of matter, temperature & motion, and cooling. Balloons always make people smile. Explain the Leidenfrost effect as well!



Make a magic wand by fixing LEDs to the end of a bamboo stick. Then change the emission wavelength through cooling in liquid Nitrogen. It's not Harry Potter, it's Physics!







This lecture is 90-120 mins but we take a 60 min short version to local high schools, & have even invited high school classes to [@FemtoSt](#)

Live Science is immensely rewarding for everyone. Try it yourselves for [#IDL2020](#)  
[@IDLofficial](#) [@OpticalSociety](#) [@IEEEPhotonics](#) [@SPIEtweets](#)

And most importantly, thanks again to [@CocoLapre](#) for the photos, all the volunteers who helped out, and [@ClaireDupouet](#) [@Jacques\\_Bahi](#) [@LaurentLarger](#) [@FemtoSt](#)  
[@CNRS\\_Centre\\_Est](#) [@INSIS\\_CNRS](#) [@fc\\_univ](#) [@Univ\\_BFC](#) for all the continued support.

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