

HOW I GOT HERE

Q&A

OLIVIA SWEENEY
CHEMICAL ENGINEER

Olivia Sweeney sources aroma chemicals to create fragrances at cosmetics company Lush. She is working on finding new, more sustainable sources of fragrance ingredients, with an interest in the research and development of chemical production from waste streams.

WHY DID YOU FIRST BECOME INTERESTED IN ENGINEERING?

In truth, it was mainly luck. I had varied dreams, from Formula One mechanic to a film orchestra violinist. I've always been concerned about the environment, but my idea of what engineers did was very limited (fixing engines!).

The state of our planet inspired me to become an engineer. I was sick of reading about climate change, landfill build-up and destruction of habitats, and fed up of feeling so small in such a global problem. I wanted to equip myself to make a tangible change, which led me to an engineering degree. The description of chemical engineering resonated with me and, luckily, my A-level subjects allowed me to study it.

HOW DID YOU GET TO WHERE YOU ARE NOW?

I studied AS levels in music and further maths, and A Levels in English literature, chemistry and maths before studying chemical engineering at the University of Edinburgh. I did a few internships during my five-year degree. I spent a month at the National University of Sciences and Technology in Pakistan simulating the effectiveness of membranes for exhaust gas carbon capture. Through a Saltire Scholarship (from the Scottish government



Olivia graduated from the University of Edinburgh in July 2017

and Scottish Higher Education Institutions), I spent three months at Jabil, an electronics company, looking at how its Scottish site could become energy neutral. This included big changes such as installing wind turbines and in-house solutions that included using rain and internal water.

For my Master's research, I spent nine months in Gothenburg conducting joint research between Chalmers University of Technology and Preem, a petrol corporation, where I studied how catalysts impact the composition of biofuel generated from 'tall oil' (a waste product from the paper and pulp industry).

The theme of these placements was sustainability and helping the environment. I knew that was what I wanted to do, but I had not found the most effective or enjoyable way of doing it. Internships are a brilliant way to find out.

WHAT HAS BEEN YOUR BIGGEST ACHIEVEMENT TO DATE?

The one that is freshest in my memory is graduating and getting a job in the same week! It is great when all your work pays off. Graduating is something that I have aimed for since starting secondary school, and to have achieved that goal was an exciting, but scary, prospect. Balancing working, studying and all the extras (which for me was music)

was near enough impossible, so to achieve the best outcome was equal parts relief and joy!

My biggest non-academic achievement was managing to run the Edinburgh Half Marathon and climb Ben Nevis in three days. It was a close call, but I pulled it off.

WHAT IS YOUR FAVOURITE THING ABOUT BEING AN ENGINEER?

Right now, my favourite thing is saying that I am an engineer. Now that I've graduated I feel that I have earned it!

Apart from that, I love that no problem phases me. They do initially – even engineers are human – but then I can take a step back, break it down into chunks, and understand how those small parts work. Then I can build them back up again into a functional solution. I'm a chemical engineer so have a certain area of expertise, but you can apply that logic to anything. I really enjoy it when people come to me with a problem at work and I can develop a solution, even if it isn't chemical engineering. The things you learn and discover in the process are worth the fear of being a little out of your depth.

WHAT DOES A TYPICAL DAY AT WORK INVOLVE FOR YOU?

It really depends. A typical day is spent at my computer, working through a combination of emails, spreadsheets and research, with a few meetings thrown in. My research at the moment is focusing on waste streams, both within Lush and collaboratively with external companies, to generate new ingredients.

My overall goal is to keep improving Lush's supply chain in line with our cruelty-free testing and ethical buying policies. I aim to spend a couple of hours a week in our manufacturing facility where our quality

control is based. Here, I can talk through any supply, quality or compounding issues and work out short- and long-term solutions. An element of my job also helps the creative team achieve its aims and brings new materials to its attention.

No two days are the same – it is busy, stressful and the autonomy that I have is a little scary for my first proper job, but most importantly, it's exciting.

ARE THERE ANY CUTTING-EDGE TECHNOLOGIES THAT YOU WORK WITH?

On my most exciting days, I am lucky enough to visit companies to learn about new developments in the fragrance industry. I have tried out supercritical CO₂ extraction, as well as microwave-assisted extraction. Last week, I went to Nice to meet a supplier who undertakes extractions for us, such as steam and hydro distillation as well as solvent extraction, and got to see ultrasound extraction. My main area of focus is the industrial production of aroma chemicals via fermentation. Trying to achieve this without animal testing and genetically modified organisms has made it more difficult, but I'm excited about the prospect of using fermentation to generate desired chemicals from waste streams.

WHAT WOULD BE YOUR ADVICE TO YOUNG PEOPLE LOOKING TO PURSUE A CAREER IN ENGINEERING?

Just do it! I think that young children have an innate curiosity that lends itself well to engineering; this should be nurtured into adolescence and allowed to flourish. You don't have to be good at maths or interested in cars to be an engineer. If anything, we have enough of those engineers! Take what makes you happy, find out how it works and make it better.

WHAT'S NEXT FOR YOU?

I have a few big projects at work that will make a significant impact on how we source our aroma chemicals, so trying to pull those off is my main focus at the moment. I don't want to be UK-based forever, so planning my career to allow me to move abroad is also on my list.

Apart from that, a friend and I are launching a website for young professional women in STEM. We are still a long way from gender equality and being an active part of the solution is the most positive route to take. We have also discussed launching our own green company later. False green marketing is starting to become a real issue and I am passionate about ensuring that people can truthfully be environmentally conscious, sustainable and maybe even positively impact regeneration.

On a more fun note, I have moved to the coast with work, so I want to make better use of living by the sea and take up a watersport. I cannot decide between paddle boarding, sailing and open-water swimming, so suggestions are welcome while I wait for the sun to warm the English Channel!

To find out more about the fragrances that Olivia works with, visit www.facebook.com/LushLifeEN/videos/1213173202149323

QUICK-FIRE FACTS

Age: 24

Qualifications: MEng Chemical Engineering (Hons), University of Edinburgh

Biggest inspiration: Mae Jemison, chemical engineer, doctor and NASA astronaut

Most-used technology: My work phone or my iPad

Three words that describe you: Happy determined environmentalist