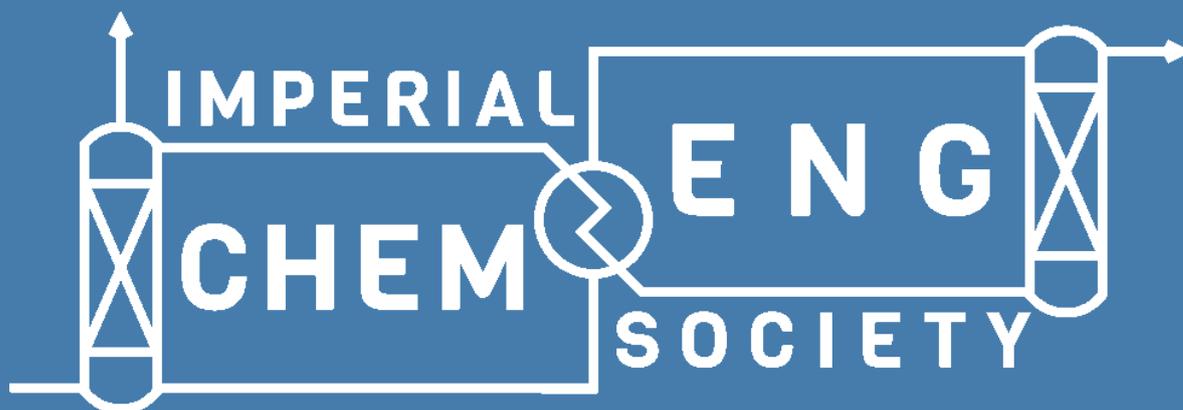


CREDIT: XUANYU TONG. RUNNER-UP OF CHEMICAL ENGINEERING PHOTO CONTEST 2019 (PG, BLUE)

THE
PIPELINE



CHEMENG SOC SOCIAL MEDIA



GENERAL FACEBOOK PAGE: www.facebook.com/icchemengsoc



FLICKR: www.flickr.com/photos/chemengsoc/albums



EMAIL: guilds.chemeng@imperial.ac.uk



WEBSITE: www.chemengsoc.com



INSTAGRAM: www.instagram.com/icchemengsoc



LINKEDIN: www.linkedin.com/company/imperial-college-chemical-engineering-society

DEPARTMENTAL SOCIAL MEDIA



WEBSITE: www.imperial.ac.uk/chemical-engineering



TWITTER: www.twitter.com/imperialchemeng



LINKEDIN PAGE: www.linkedin.com/showcase/department-of-chemical-engineering

LINKEDIN GROUP: www.linkedin.com/groups/1829242

OTHER STUDENT MEDIA OUTLETS



CHEMENG CONVERSATIONS: www.imperial.ac.uk/chemical-engineering/research/chemeng-conversations-



FELIX: www.felixonline.co.uk



ENERGY JOURNAL: www.energyjournal.co.uk

IN THE PIPELINE

A NOTE FROM THE EDITOR

Well

So this happened. I won't bore you with extra details about the crisis, how bad it is, that so many are stuck in suffering with a lack of equipment, of ventilators... and of a cure.

This issue has literally been designed to cheer you up. This past week has consisted of me sending 100 emails to co-ordinate everything, and de-stressing by watching [Bon Appetit's Gourmet Makes](#). Please appreciate, and flick through.

My favourite articles are *everything*. We have got an intro from our [President](#) and VP, and get a *real* insight into their lives. We say farewell to [Katie and Ben](#), our Chair and VC, and say hello to our new Chair: [Alessandro Tonus](#).

We have all of our old favourites: [Faith](#), [Uncle B](#) and the [Briefing](#). We have our interviews with *inspiring* alumnus [Su Ahmad](#), and a wonderful ChemEng Conversations piece with [Camille Petit](#). Perfect to raise your spirits.

And if your spirits weren't raised enough, we head into an eighteen-page spread for all the [winners of the Photo Competition 2020](#). Fennell was kind enough to give special President's Awards 'for being uplifting at a time where it is needed'.

We have [Corona Central](#), with a range of pieces to keep you in the loop with departmental goings-on. Douglas, our secretary, talks about what is going [through students' heads at the moment](#). I chat with people around the [department to find out how the virus is affecting them](#). And we chat about [Imperial Lather](#), the group of staff who will create over *ONE TONNE* of hand sanitiser across Imperial's five hospitals. It's pretty damn inspiring.

And with all the free time you've got, why not try our [ChemEng puzzles](#)? Plus, as a bonus, you could win £20 to spend on reading material/bog roll on Amazon.

Finally, here's my plea to all of you reading: join committee. It's fun, it's a great way to procrastinate and it's fantastic for the CV. I've had a whale of a time this year. Hopefully one of y'all will run for re-election in the upcoming campaign, and become the *esteemed* Pipeline Editor.

Stay safe.

Kathryn

*PS: underlined = link to somewhere. Download the edition to press on the links.

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A NOTE FROM EL PRESIDENTE

I'M SORRY, ALL HISPANOPHONES

Hello All

I hope that you are all safe and well wherever you are, and that you've either had the virus and come through unscathed, or that you are still effectively dodging it. Kathryn's asked me to write something inspiring for you, but I think that the true inspiration this week has to come from looking at the Imperial Lather team, who have been tirelessly working to produce hand gel from all of the alcohol [don't worry, not the Soc supplies, the *laboratory* alcohol] in the department, and sending it to the NHS. Including donations, they have managed to produce nearly a tonne!

I know that it's a massive drag being cooped up all day, with little access to sunlight, and subject to nonsensical instructions from leaders who seem in many cases divorced from reality - but the design project is finished now, and Klaus is currently working on the specifications for next year (continuously-produced COVID-19 vaccine?). Joking aside, I know that a lot of you will be in lockdown in small locations, and it won't be a great time for you. Exercise outside (where that is allowed), and keep in contact with friends and family via videoconference - but most of all, realise that this will be temporary, that regardless of how criminally irresponsible the leaders of (y)our countries are, the wheels of science, engineering and medicine are turning around the world to overcome this disease. You can do your part by phoning a loved one who lives alone, by volunteering in your local area (where safe to do so), by washing your hands, and most critically BY STAYING AT HOME (get food when you need it, but keep your distance whilst doing so!).

If any of you ever think 'why is chemical engineering important?', there is apparently a critical shortage of reagents for testing kits in the UK. Should this be true, I expect the UK chemical engineering industry to be stepping up to the mark in the next few days. Might have been nice for them to be notified by government, not from the news, is all I'm saying on that subject.

Imperial may be shut, but SCIENCE goes on. I have been working on new areas of research, ably assisted by my new laboratory assistant (see Fig 1). It transpires that big tomatoes are slightly less dense than water, but that small tomatoes are more dense. It also turns out that you lot are SIGNIFICANTLY better at following my instructions in the laboratory than my current assistants, and I look forward to upgrading to people who don't say that science is "boring" and "they'd rather play netball, why can't we play netball?".

As you know, all examinations will be online. This will be a serious undertaking. All staff are working hard to make their exams suitable for these conditions. We know that you are very keen to hear exactly what will happen; understand that Jason and Omar are spending half of their time in Zoom meetings trying to work out how best to do this. They will try to come up with something as fair as possible, reflective of your hard work and drive throughout your time at Imperial... but bear with them.

Wash your hands. Stay at home. Love to you all.

Paul



Figure 1: Natural sciencing

FROM EL VICE PRESIDENTE

I ONLY MADE IT TO HORIZONS LEVEL 2

Dear Students

I know your esteemed ChemEngSoc President will have some words of reassurance and encouragement, will highlight some of the brilliant work being done by our department to support the NHS in this time of great need, and will no doubt have peppered his introduction with the kind of near the knuckle humour for which he is infamous. Thus I shall start by echoing his words, unless he has written anything properly objectionable, in which case I disown them completely and I swear I wasn't allowed to read Pipeline before it went to print.

I'm very pleased, finally, to be asked by Kathryn and Paul to write an introduction for this magazine, although I notice that it took a global pandemic to make it happen. With Prof Fennell being male and middle-aged, and therefore at elevated risk of suffering from the more debilitating effects of COVID-19, ChemEngSoc felt it was prudent to designate someone able to step in at short notice to do whatever it is the President of ChemEngSoc does (see Fig. 1). I suggested that it would be more sensible if this role was given to Camille, not to another middle-aged bloke like me, which frankly leaves us completely exposed to common mode failure, but Paul was too busy baking artisan breads with his stockpile of flour, and so my suggestion fell on deaf ears.



Figure 1: The ChemEngSoc presidential hierarchy

During our first virtual academic staff meeting last week, a strange looking man dressed only in his underpants suddenly appeared on our screens. My immediate thought was that we were being Zoombombed, which I'd just read about in the newspaper. However, I quickly realised that it was Prof Fennell, and I can testify that this has long been his default attire for online discussions.

For me and many of my colleagues, the tantalising prospect of some kind of super productive Working From Home utopia was swiftly dashed when schools and nurseries closed their doors two weeks ago. Suddenly responsible for the education of our two young children, I naturally fell back on what I've learned after five years of teaching at Imperial. Unfortunately, they just weren't that into Safety and Loss Prevention, so I've been forced to brush up on my basic maths.

I will bring this probably slightly too irreverent introduction to a close, with a jarring shift in tone. Vertiginous drop in productivity aside, I consider myself privileged to have the opportunity to see more of my family, and it is a welcome distraction from the daily news. I realise that regardless of personal circumstances, everyone is finding it very difficult to focus on anything at the moment. Rest assured, it is completely understandable and you are not alone: the disruption to all your lives has been immense and so sudden. If you're feeling overwhelmed and finding it difficult to cope, we are still here to offer support, you only have to ask. I'm thinking of you all, and I hope you and your families are remaining well.

Chris

WELCOMES AND FAREWELLS

SO LONG, FAREWELL, AUF WIEDERSHEN, GOODBYE?

FROM KATIE (Y4), CHAIR OF CHEMENGSOCC



Wow! This year's final Pipeline already! I've been so impatient to reach the final weeks of my degree... but as graduation approaches, I realise how sad I'll be to leave - especially in such strange circumstances. I hope you're all staying safe and doing your bit to protect others during these difficult times!

A little over a year ago, I was so excited to have been elected as this year's Chair of ChemEngSoc, and it's lived up to my high expectations. I really hope you've noticed some of the real hard work that your wonderful committee have put in to elevate your experience this year! From the new logo to ChemEng & Coffee, a professional photo shoot, careers workshops, exciting events throughout the year and, of course, a reinvented Pipeline. I hope our hard work to revamp our activity portfolio has paid off, and that you continue to enjoy these next year. Thank you to everybody who contributed and attended every single event!

Before I depart, I'll leave you with some fourth-year wisdom:

- 1) Run for a position in the ChemEngSoc committee - you won't regret it!
- 2) Don't dread FYD - it isn't as bad as everybody says it is. I promised myself no all-nighters, and I didn't have any - it is possible!!
- 3) DO look forward to your fourth year research project and pick a partner with similar interests and goals (Komal, you were great <3)

Katie

FROM BEN (Y4), VICE-CHAIR OF CHEMENGSOCC



Well, here we are, nearly at the end of quite a crazy year. Hopefully you are well, staying somewhere safe, and managing to revise at least somewhat productively (but not TOO much). I can only echo Katie by saying that, while you may wish for it all to be over when you're stuck in the middle of Flowsheeting or RDCP or Final Year Design, you'll get to the end and wish you didn't have to leave! This is truly a fantastic place to be for your studies and I'm so glad I got to spend it with the students and staff of our department.

I don't think I quite expected to be so involved with ChemEngSoc as Vice Chair but, looking back, I am so glad I ran and got the chance to change things for the better. As Katie said, put your name forward and run for a position - it was probably the most rewarding thing I did at Imperial! Whether you attended some of our many careers events, picked up some regalia, met new people at our informal socials, or got involved with ChemEngSoc in any other way, I really hope you benefited from all the effort we put in this year. The committee is there to make your university lives better, and it was a pleasure to help Katie lead a team of students committed to that mission.

If I could end with a few tips from my time in department, too:

1. Choose electives that you are interested in and want to learn about - not just the ones you think may be easier (looking at you, Business School electives...)
2. Have a work-life balance and don't spend your entire degree in the study rooms. It's so important you don't waste your university life re-doing your Safety & Loss problem sheets for the fourth time!!
3. Katie is right - FYD isn't so bad and you can have a lot of fun with your team. Although you *may* need one all-nighter, or two... or three...

Ben

FROM ALE (Y3), CHAIR-ELECT OF CHEMENGSOCC

Hi everyone

I am thrilled and honoured to have been elected Chair. During the past year, I came to experience the Society in most of its aspects, and gained the overview needed to carry on the fantastic work that Katie and Ben did.

I will give my 100% towards the success of ChemEngSoc by leading and supporting our committee and their ideas. Get ready for more events, career support, and initiatives, as well as opportunities for you to get involved and enhance the student experience! Next year will be particularly challenging as a result of the difficult situation we are currently experiencing, but we will work with the department and our industry partners to ensure a successful and safe event season.

I am currently planning on bringing you more low-key social events that fit better with your commitments, based on this year's feedback, and a student-led early careers support to help our Year 1 and Year 2 students take their first steps towards their dream job!

If you have any ideas, initiatives, or want to get involved with the Society, do not hesitate to contact me (alessandro.tonus17@imperial.ac.uk).

I wish you all a great (and safe) spring break.

Alessandro

IMPERIAL'S LEADERSHIP ELECTIONS ARE BACK.

Here's **your** chance to get involved behind-the-scenes of ChemEngSoc.

We're looking to fill some **major roles**, including: Events Officers, Vice-Chair, First Year Co-ordinator, and *ahem* Pipeline Editor.

Nominations open: **Monday 5th April**. Nominations close: **Sunday 18th April**.



INDUSTRIAL RELATIONS

THE REASON THE STAFF CAN PLAY FANCY DRESS

BY ALESSANDRO TONUS (Y3)

What an amazing year it was for Industrial Relations: fourteen events, among which careers talks, workshops and quality networking with our industrial partners, and more off-campus opportunities! Starting last summer, we have worked hard to rebrand the Society and its approach to careers events. With our partnering companies, we shifted our focus towards higher quality engagement and active events that help our members develop key transferrable skills to succeed in securing their dream job.

This year, we had the pleasure to welcome ABB, one of the biggest engineering and technology firms, in our first collaboration (see Fig. 1). After years of them working with the department without engaging with students directly, this is a great achievement for both organisations, and we hope to see the partnership grow in the future.

We have also had our first collaboration with Arthur D Little, international consultancy, in an interesting case study workshop that introduced our members to risk consulting. This added great variety to our sponsorship portfolio, with representation of a sector that interests many students in ChemEng.

Another success from this year was our amazing subcommittee! Daniel, Denys, Karthik and Keval (see Fig. 2) pioneered an event with a grand total of seven Small and Medium Enterprises, with panel discussions around working in smaller companies, as well as issues and themes in the expertise areas of the participating companies. A good percentage of our graduates pursue this type of employment as opposed to big corporations, so it is valuable to have them represented in ChemEngSoc events, and the future committee. Our other two subcommittee members from the Year 1 cohort, Karen and Paulina, experienced the core IR tasks and helped set up the new partnership with ABB and deliver our first event with them, while also brainstorming new ideas and ways to improve the Industrial Relations services we offer.

We look forward to seeing the next committee build up on our experience, and want to congratulate Paulina on her newly elected position as one of the next Industrial Relations Officers!



Figure 1: Our first event with ABB had a large turn-out



Figure 2: The *amazing* subcommittee

Vanessa and Ale

ALUMNI UPDATE

YOU WILL EVENTUALLY BE ONE.

BY HIREN PANDYA (Y3)



The role of Alumni Officer involves liaising with graduates from the department in order to organise events and schemes for current students to help them with their career goals. The best part of the job is being to network with so many high-profile graduates from our department, including CEOs of various companies and world-renowned engineers and scientists. You can hear from a few of these in the 'Chat with a Grad' column in previous Pipeline issues, which I have been running since the start of the academic year.

The great thing about the role is the flexibility it gives you. If you want to start a new event or scheme, or have particular alumni you would like to meet, you are free to do so.

The highlight of the year for me has undoubtedly been planning and hosting the Careerathon, a new event I set-up whereby students can network and contribute to a Q&A panel with a number of recent alumni and partake in group workshops led by previous interns. I specifically tried to include as many careers sectors as possible in order to make the event inclusive for everyone. The event saw the highest turnout of any careers related ChemEngSoc event this year, and I hope to see it continue into the future.



With the help of our Academic Representatives, we are in the process of setting up a Careers Inventory Scheme, whereby recent alumni can send in their CVs, cover letters and job application forms to provide guidance for our current students applying for jobs and internships. I hope this scheme is useful for our students in the years to come.

The Alumni Officer also has the opportunity to host an Alumni Speed-Networking event later in the calendar year for our more illustrious alumni, but this had to be postponed due to the COVID-19 outbreak.

If you have any questions about the role, please feel free to get in touch!

Hiren



DEP REP UPDATE

SO MANY MEMORIES

BY ATHANASIOS CHAROS (Y3)

Since interview day at the Department, I knew I wanted to become as involved as possible with ChemEng and with all students. Fast-forward two years, having been elected twice as an academic year rep, I knew I was ready to take the next step and nominate myself for Departmental Representative. What drove my decision was the ability to finally get involved with long-term projects that could effectively impact the whole of the student body. Additionally, whilst representing my cohort was fun, I was continuously subjected to roasting in the year group chat; I realised it was time to get out.

I was lucky to be elected as one of the DepReps, as the position was heavily contested by Imperial Election standards, and I was even more lucky to get elected with Mingrou (see Fig. 1)! Having never worked with her, I was somewhat worried as there were many tasks we had to carry out immediately. Thankfully we worked well together and actually formed a really good team (even though sometimes one of her tasks was to remind me of my tasks – I am so sorry, Mingrou).



Figure 1: Thanos and Mingrou with the Newitts

We worked hard to get the new Chillout Room ready as fast as possible and to equip it as best as we could, we worked hard to organise an interesting and successful Newitt Lecture (see Fig. 2 and 3) but of course we also worked really, really hard on projects that you guys have no idea about... yet. And that is the real beauty of being a DepRep, taking part in meetings with senior staff of the department, having your voice heard and your opinion valued when decisions are being taken. The impact of my role, alongside helping to organise Admissions Days, were definitely my highlights of the year (even though the latter point prompted some friends of mine to falsely tag me to a very UNTRUE post of Imperial Exposed - [#ICE19077](#)). And in retrospect, I think this position has taught me more about Project Management than the... beloved third-year Business School module.



Figure 2: Members from across the Department attend the lecture, from first year undergraduates to lecturers

For next year, I am excited to continue our good work and start new projects, ideally with help from all of you! I would like to conclude with a big thank you to all of you who have helped Mingrou and me throughout the year, both staff and students, and I wish you all happy Quarantine.

Thanos

Figure 3: Paul Caldwell, CEO of Ceres Power, was the guest speaker for the Newitt Lecture



REGALIA

INSERT TRY-HARD PUN HERE

BY ARIS MORNT0 (Y3) - DEP REP-ELECT, PARTNERING THANOS

Our society's regalia made tremendous progress this year! Not only did we develop a new logo, but we also found many new ways to showcase our ChemEng identity; some of the most successful are:

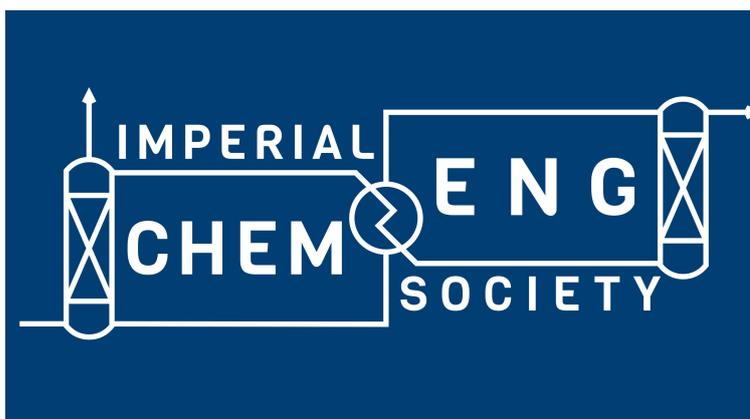
- Cups: the coffee cups we gave out at the beginning of the year were really popular, becoming ubiquitous in lecture theatres, study rooms, and even some offices, even being adopted by some staff outside the department.
- Flags: our brand new flags — proudly bearing our logo in white and blue — have taken ChemEng glory as high as Mt Everest, as far south as New Zealand, and have even reached some obscure universities, like MIT. We look forward to dispatching them to distant corners of the world next year as well, building on this new tradition.



- Classic Sweatshirts & Hoodies: we received more than 150 orders for our sweatshirts and hoodies, and plan on expanding to more designs next year.

A few words on the logo:

The new ChemEngSoc logo has been designed to capture the unique character of our society. It represents the carbon-capture pilot plant, a symbol of Imperial's state-of-the-art tech, and our love for sustainability. On a deeper level, the logo represents the continuous cycle of knowledge (note the recycle loop) and the fact that we all leave ChemEng better than we came into it (note the outgoing arrow is higher than the incoming one).



Aris



FIRST YEAR CO-ORDINATOR

SOME WITTY COMMENT

BY ZAHRA ABIOLA (Y2)

If you ask anyone, the most memorable time of university is going to be their freshers experience. As First Year Coordinator, you have the opportunity to make the fresher experience a little bit better for the department's next cohort chemical engineers. You help them get integrated into the department they are going to be a part of for the next 4 years.

This role will put your match making skills to the test as you pair up the perfect families. The criteria for doing this is up to you so you can get as creative as you want. I used clubs and societies in hopes that shared activities outside of the department will allow further bonding time for families, but this isn't perfect – I can admit that. Do you have the perfect sorting system to make strong families?

Once families have been paired up, you've got to help them break the ice. As First Year Coordinator, there are a couple of events that you are in charge of. The best thing about these events is how much freedom you have to make your vision come to life. You've also got a very reasonable budget to aid in the planning. I got to be Steve Harvey for a night. I made one of the events picnic themed. It helps to be charismatic and confident when leading these. Everyone will be meeting each other for the first time so it helps that you give off a welcoming vibe that they can hang on to.

All this freedom also means a lot of responsibility. This role is a great way of improving your organisational and planning skills. There is a lot that goes into making sure an event runs smoothly but with the rest of the committee to show you the ropes and give you guidance, the learning curve isn't too steep.

Right at the beginning of term, there is the fresher's lunch. This is the first time that the families meet so you've got to make sure strong bonds are formed. Then you've got the family pub quiz. Like retention after lectures, you sometimes need to reignite the familial flame, and nothing brings families together like free booze.

There is also the option to add more events onto the roster for families or the society in general. From board game nights to pancake day in the concourse – the world is your oyster. There are so many opportunities to improve things in this role and with this job description, there is a lot of wiggle room. You can also help out with other aspects of the society like general events or advertising to first years.

My favourite part of this role was hosting the events. I really enjoyed seeing everyone bond and enjoy themselves at the socials and I loved hearing from my friends how well they got along with their kids. It definitely made the whole thing worth it to see the positive impact of the role in front of me in real time. Even though this was a good year, there are so many things that I know the next the person with this role can improve on and I'll be available to help on committee with you!



Figure 1: Your Wellbeing Dep Rep and Communications Officer-Elect, Zahra Abiola

Zahra



THE BRIEFING

NEWS FROM THE WORLD OF CHEMENG

BY LOUIS MARTINE (MSC)

Unhealthy Research Culture

A survey by the Wellcome Trust has highlighted the pressure for research teams to prioritise quantity over quality. From a group of 4300 UK researchers, whilst 84% said they were proud to work in the sector, 65% agreed that focus on impact and quantity is unsustainable and 75% felt pressurised to produce particular results.

Read more: April 2020 | The Chemical Engineer | page 4 | is.gd/bRMBwq

Goodbye booze, hello sanitiser

Spirit maker Pernod Ricard has started to donate alcohol (70,000 L) to sanitiser producers to help fight coronavirus, whilst UK's Brewdog and Louis Vuitton perfumes are leveraging existing production lines to manufacture sanitiser gels. In response to shortages across the UK, HSE have relaxed rules in a bid to increase production rates.

Read more: April 2020 | The Chemical Engineer | page 9 | is.gd/oCtliL and is.gd/yVyfal

Electric car battery recycling

BASF, Fortnum and Nornickel are planning a recycling centre that would recover metals from electric car batteries. The number of electric cars increased 63% from 2017 to 2018, necessitating valuable battery element recovery. The plan is to use a low CO₂ hydrometallurgical process powered by renewable energy. Fortnum's process says it will be able to recover cobalt and nickel which other recycling techniques currently cannot.

Read more: April 2020 | The Chemical Engineer | page 15 | is.gd/cnCE6X

New CEO, new attitude?

BP has announced it will leave the American Fuel and Petrochemical Manufacturers, the Western States Petroleum Association and the Western Energy Alliance after disagreements on climate policies, such as carbon pricing and methane regulations. Since BP's change of CEO in February, it announced aims to achieve net zero by 2050 through plans including 'new expectations for its relationships with trade organisations'.

Read more: April 2020 | The Chemical Engineer | page 17 | is.gd/3ziAnp

Tackle climate change like COVID

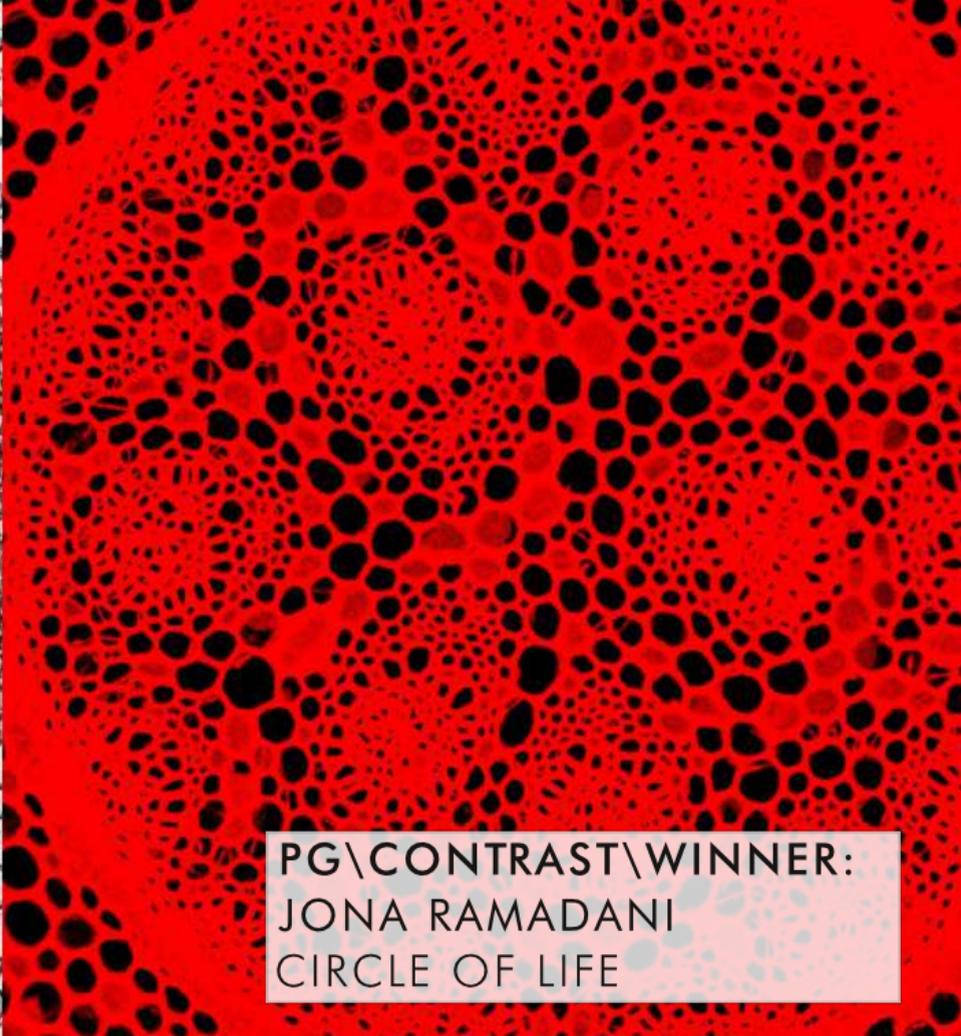
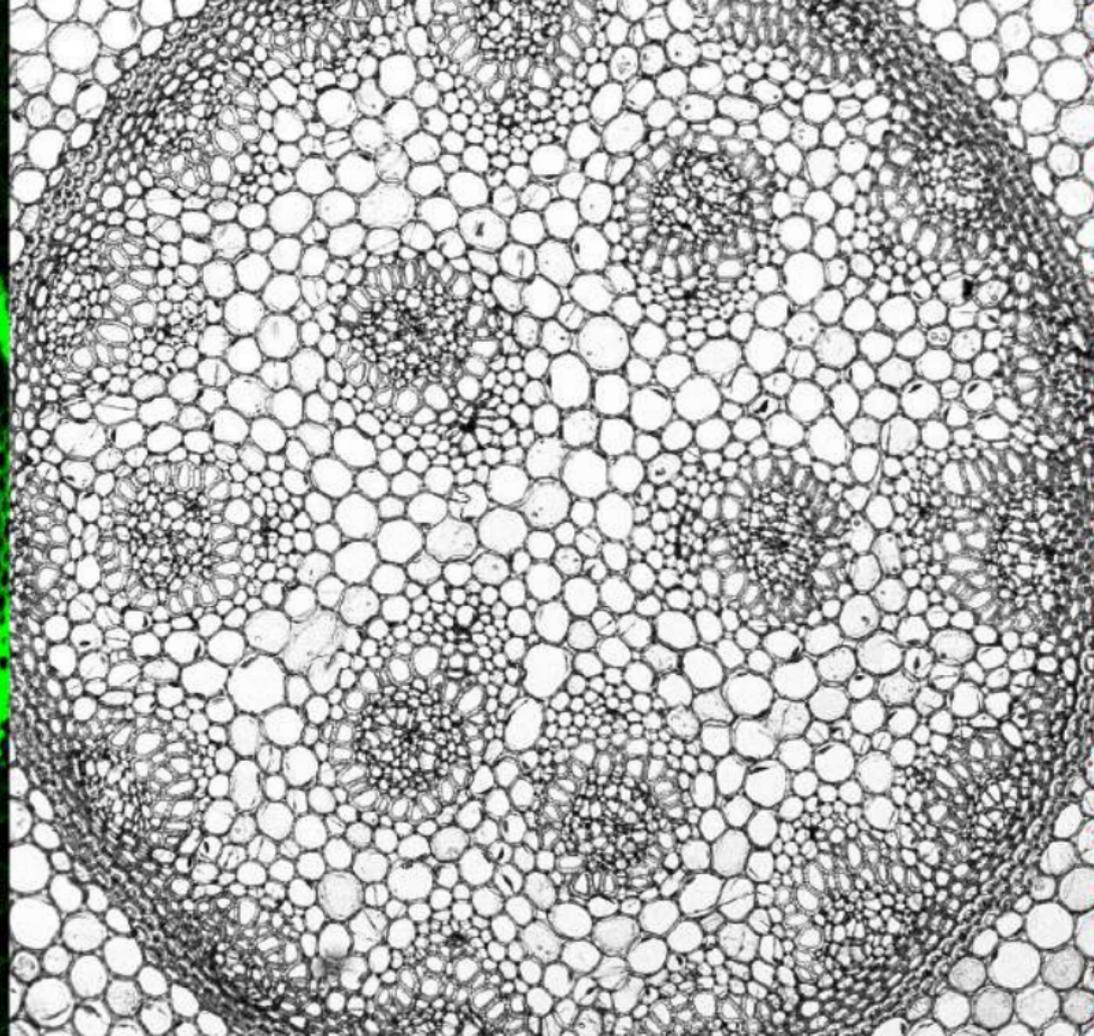
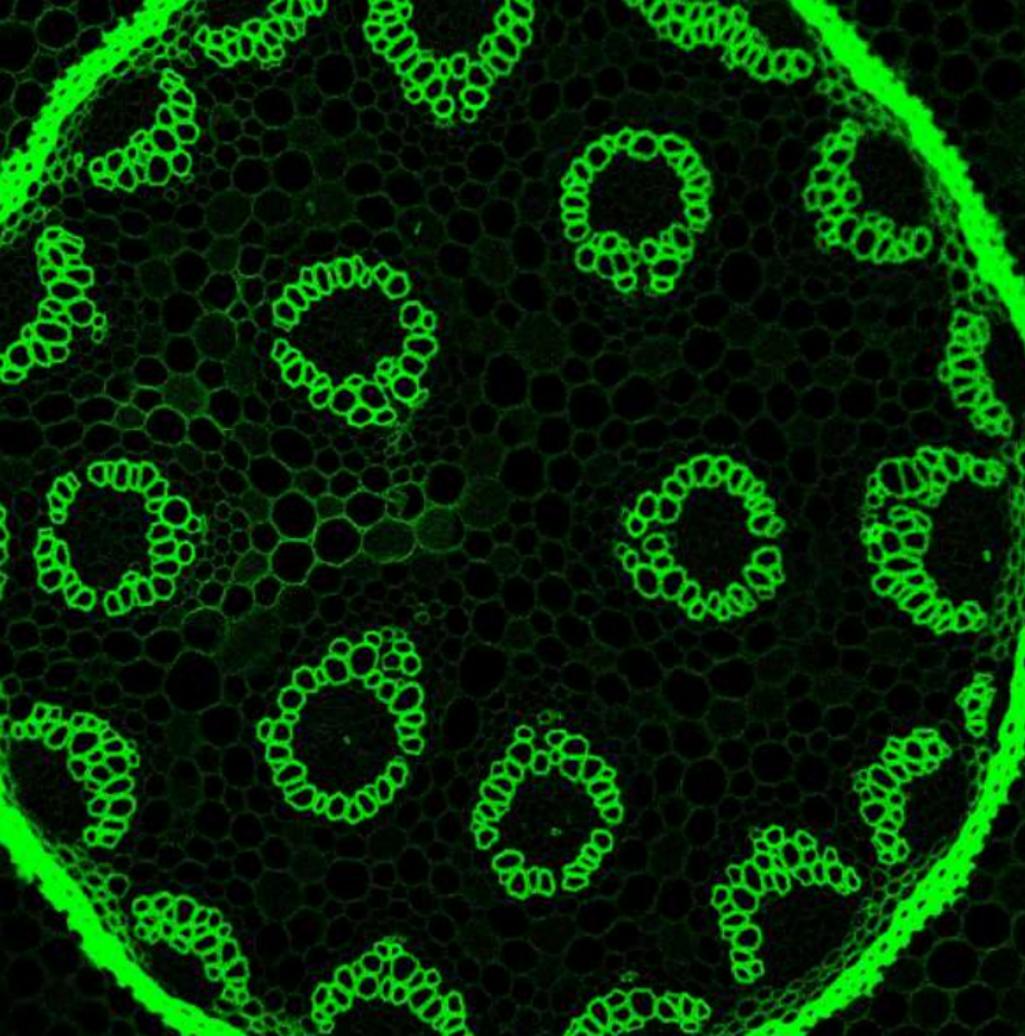
2020 was seen as a milestone year for the climate change crisis, requiring radical reversal of the current emissions trajectory. We didn't know we'd face a global health crisis at the same time, but decisions made on how to tackle this crisis could help tackle climate change. To control the coronavirus, governments are enforcing physical/social distancing, grounding flights, closing borders and providing economic stimulus. This has the potential to synergise with climate change goals, providing government aid doesn't accelerate the climate crisis, such as propping up fossil fuel industries.

Read more: is.gd/FFsBa3

Computing vs. Thermodynamics

The amount of data is huge, and is set to triple by 2025. Processing this data requires vast amounts of energy. Equations have been developed to precisely calculate the thermodynamic cost of circuit designs, leading to significant energy savings - even in existing devices.

Read more: is.gd/2slKZY



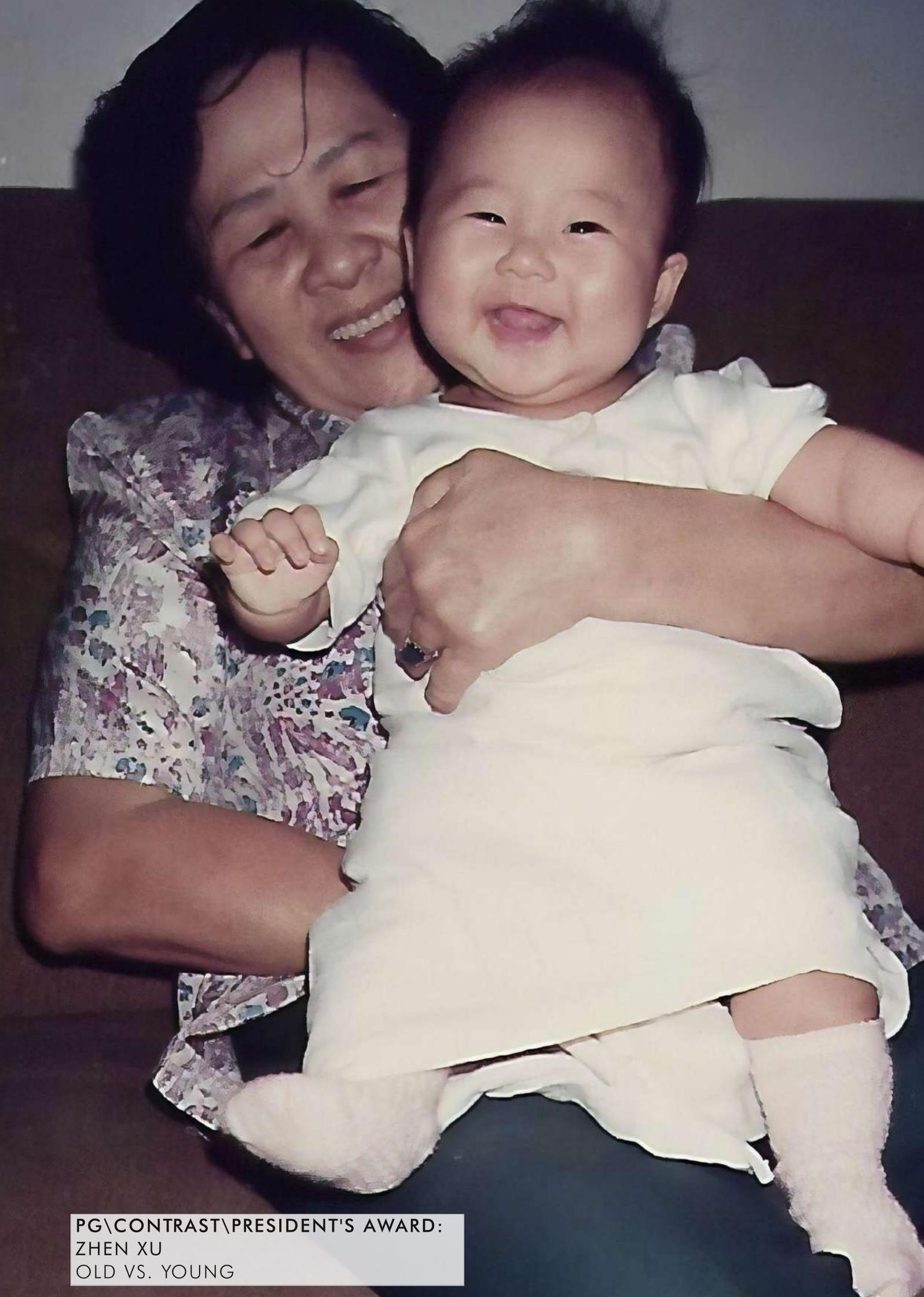
PG\CONTRAST\WINNER:
JONA RAMADANI
CIRCLE OF LIFE



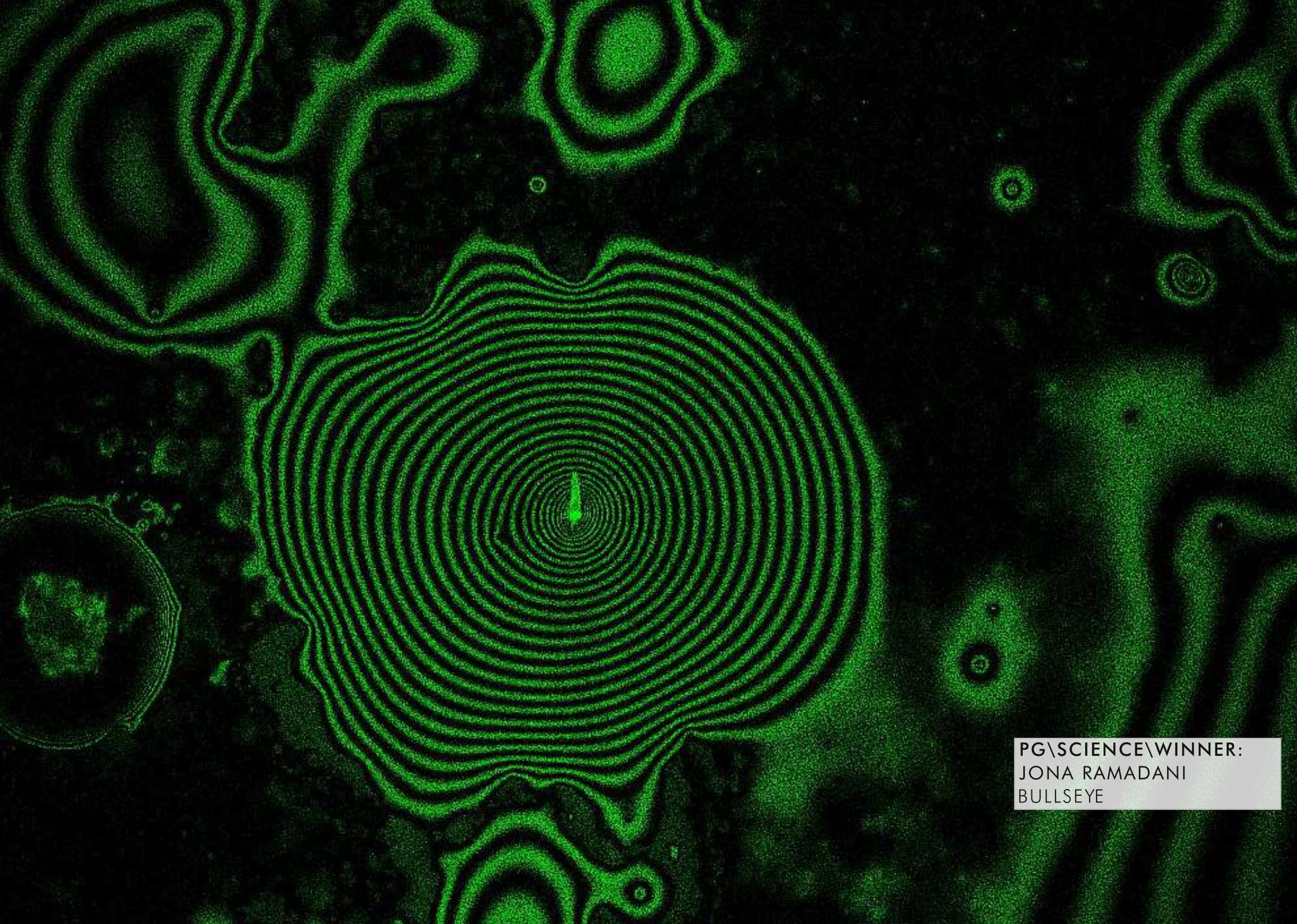
PG\CONTRAST\RUNNER-UP:
ALEXIA PASCHOU
SELENE

PG\CONTRAST\PRESIDENT'S AWARD:
ZHEN XU

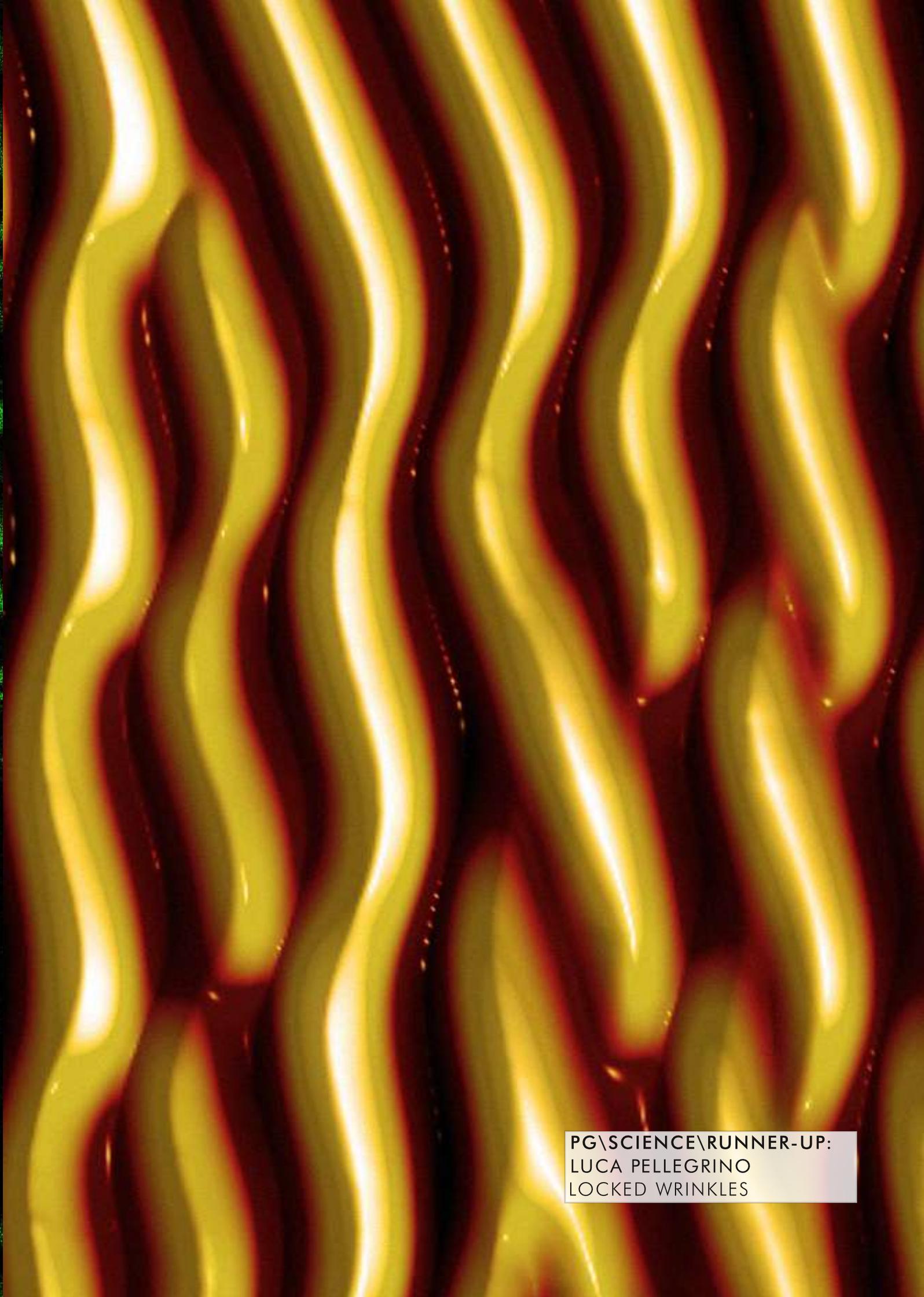




PG\CONTRAST\PRESIDENT'S AWARD:
ZHEN XU
OLD VS. YOUNG



PG\SCIENCE\WINNER:
JONA RAMADANI
BULLSEYE

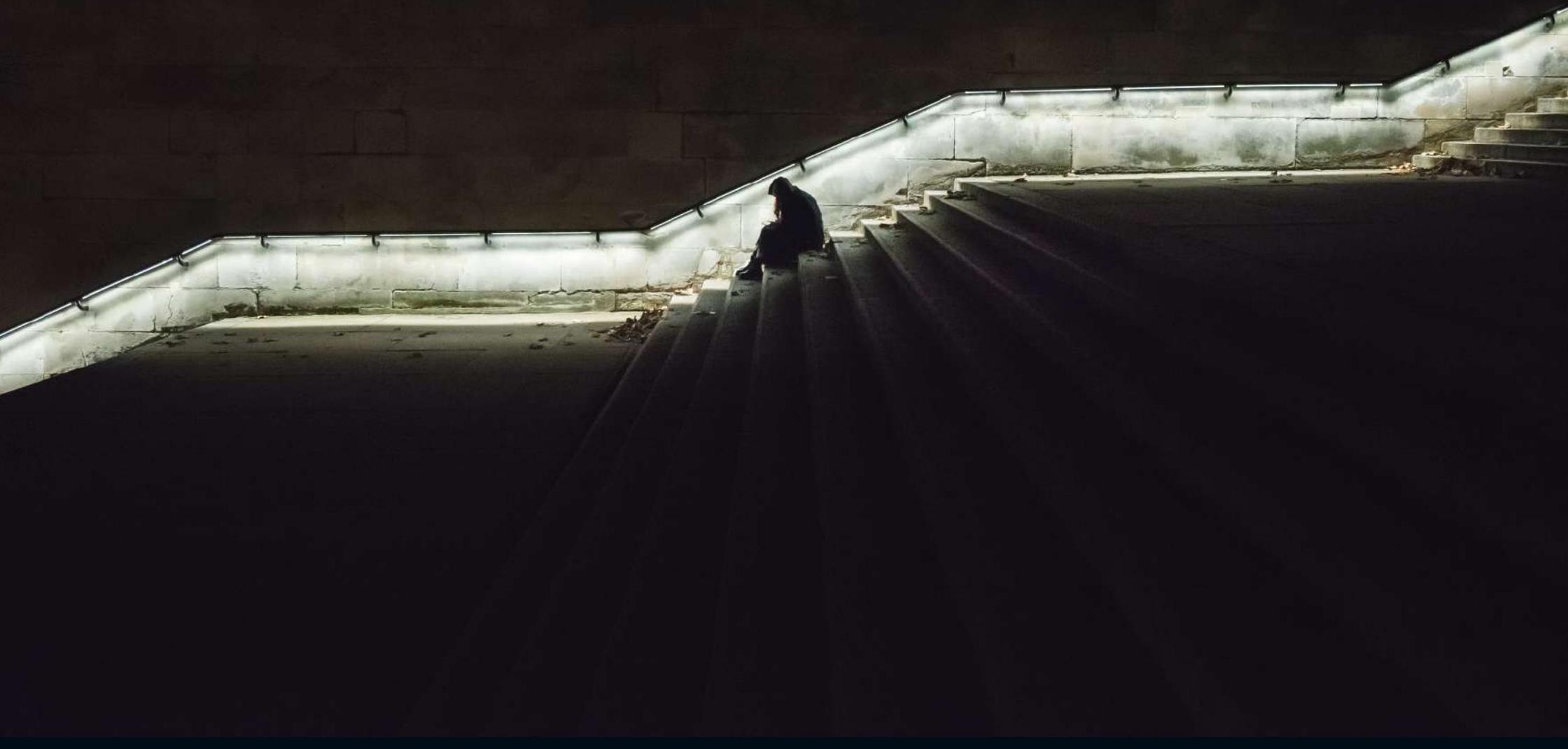


PG\SCIENCE\RUNNER-UP:
LUCA PELLEGRINO
LOCKED WRINKLES



PG\SCIENCE\PRESIDENT'S AWARD:
ZHENYU GUO

STAFF\CONTRAST\WINNER:
STAIRS

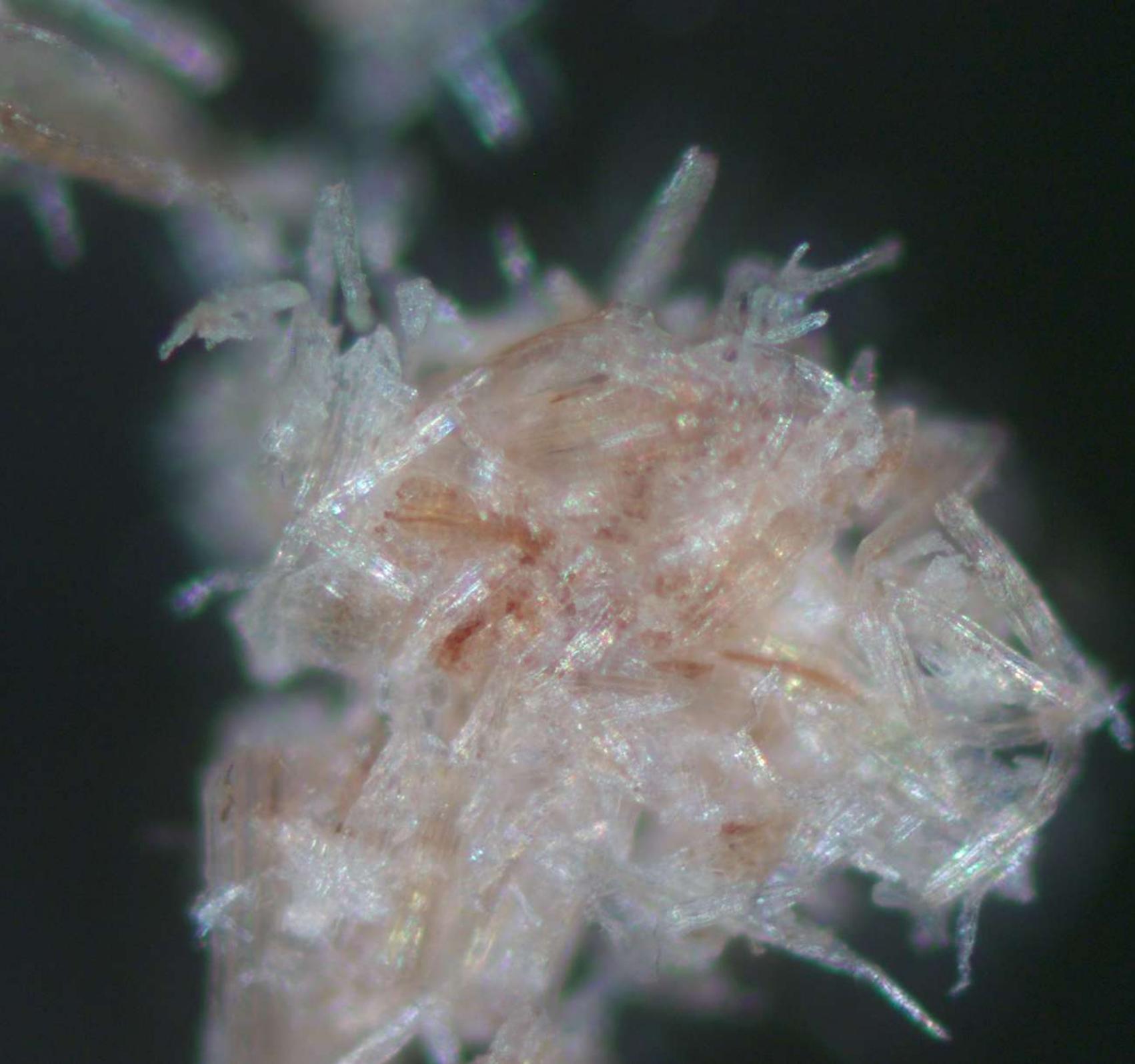




STAFF\CONTRAST\RUNNER-UP:
ANDREW MACEY
MY VILLAGE CHURCH INVITES
YOU TO SEE THE LIGHT



STAFF\CONTRAST\PRESIDENT'S AWARD:
HAOYU LIU



STAFF\SCIENCE\WINNER:
HEATHER LANGLEY
EUCALYPTUS PULP



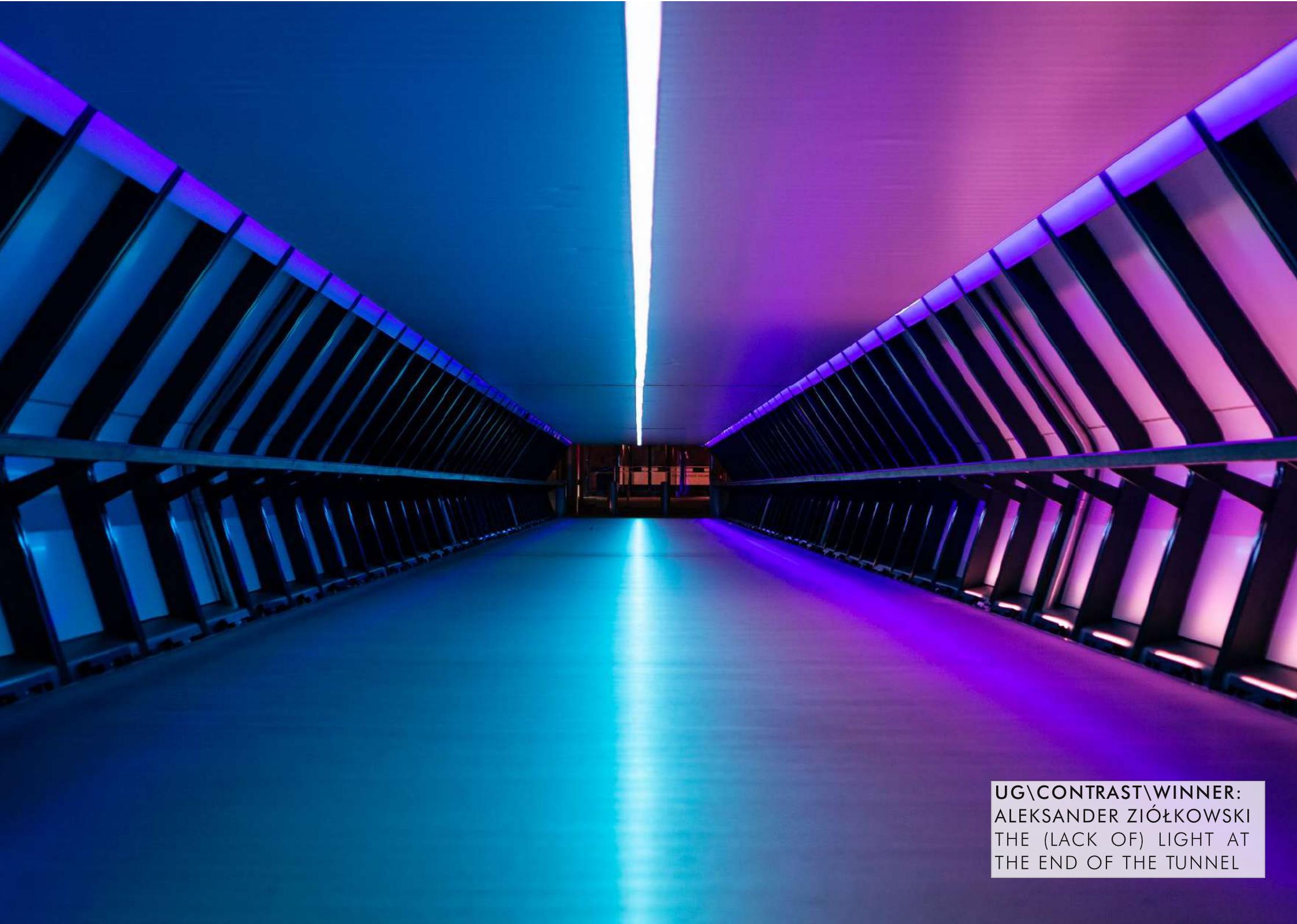
STAFF\SCIENCE\RUNNER-UP:
PAUL FENNELL
RACEWAY



UG\SCIENCE\WINNER:
ANDREAS RICHARDSON
ROCKPOOLING



UG\SCIENCE\RUNNER-UP:
ALEKSANDER ZIÓŁKOWSKI
THREE



UG\CONTRAST\WINNER:
ALEKSANDER ZIÓŁKOWSKI
THE (LACK OF) LIGHT AT
THE END OF THE TUNNEL

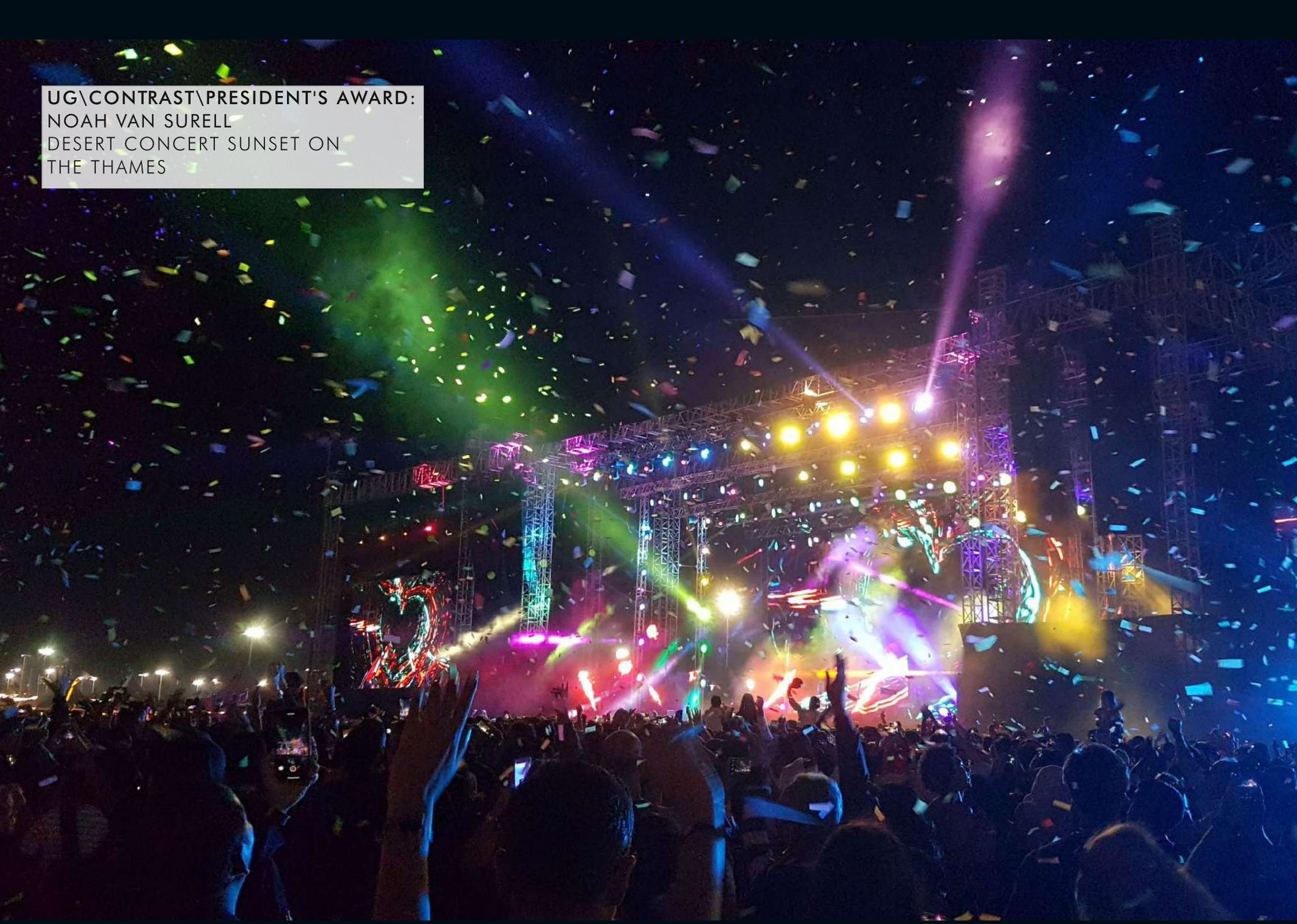


UG\CONTRAST\RUNNER-UP:
JACK POTTER
HOME

UG\PRESIDENT'S AWARD:
ANDREAS RICHARDSON
Παππού (GRANDDAD) ON
THE ROOFTOP



UG\CONTRAST\PRESIDENT'S AWARD:
NOAH VAN SURELL
DESERT CONCERT SUNSET ON
THE THAMES



MINDFUL EATING

WILL THIS MAKE YOU UNINSTALL DELIVEROO?

BY FAITH MARSH

Following on from the article on sleep, I thought it would be good to focus on another topic which can really impact wellbeing- food! The information in this article is a small overview as there is so much around this topic to cover.

Generally speaking there are some foods which have been linked to wellbeing and can possibly help improve brain function. The top ten includes whole grains, blueberries, tomatoes, oily fish, blackcurrants, pumpkin seeds, broccoli, sage, eggs and nuts. The best general advice however is to try and eat a balanced healthy diet (boring I know!). I also recommend having a treat now and then, or perhaps once a day/week as a good starting point depending on your current diet.

It is also really important to stay hydrated, this can have a massive impact on how our body and brain functions. Bear in mind the impact of caffeine and alcohol, especially on sleep as mentioned in the last article. There is an interesting scientific field of nutritional psychology which focuses on diet to maintain good wellbeing. This suggests that the food we eat directly impact our brain structure and ultimately our mood and behaviour. Multiple studies have found a correlation between a diet high in refined sugars and impaired brain function — and even a worsening of symptoms of mood disorders, such as depression.

One thing to try is to eat mindfully (see Fig. 1). Eating mindfully has been shown to improve digestion, regulate our appetite and help us enjoy our food much more. There are a few different ways to do this, the picture gives an example of how you can get started. Remember that everyone is different in

terms of how much energy from food they need. One way to find this out can be to calculate your “macros” which gives an estimate of how much of each food type you should have on a typical day. If needed some supplements may be able to help, for example during Winter months in the UK it is recommended that people take Vitamin D. There is also confusion surrounding some food types and if they are good for you or not- I will leave this up to you to research and decide on since there is so much conflicting advice around some of these foods.

For anyone who struggles with eating habits or would like to discuss anything in this article further please get in touch at f.marsh@imperial.ac.uk.



Figure 1: Guide for Mindful Eating

FAITH MARSH is the departmental wellbeing adviser. Get in touch if you need advice or a chat. Feel free to phone her (+44 20 7594 5589), or email: f.marsh@imperial.ac.uk

UNCLE B

'WHAT A STORY, MARK'

UNCLE B WANTED ME TO REFERENCE THE ROOM. THIS IS A LEVEL OF HUMOUR I FIND ACCEPTABLE.

Hope this edition is finding everyone well, especially given the circumstances! With the board being utterly useless right now, I've tried my best. If you've got any burning questions, email them to: guilds.chemeng@imperial.ac.uk. You will be *kept anonymous*.

Q: What is string theory and how is it used for total world domination?

A: Now I'm no expert in theoretical physics, but I believe it involves using balls of string to hypnotise all domestic house cats into assembling a planetary super army of feline ninjas that can ASSUME CONTROL....erm, where was I?

Q: Why is the Earth not flat?

A: Are you really going to trust Big Flat over Big Globe? Wake up sheeples. Also respect to the person who drew the Sun-Earth system as a Couette flow. (If you've reviewed Fluid Mech and you don't know what that is yet, highly recommend some Panopto and chill!)

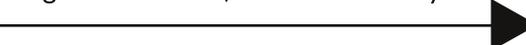
Q: Why is our [insert module here] so [insert angry comment]

A: I actually enjoyed [insert module here], but then again, we wrote about the 1990s Jubilee Line Extension and *I like trains*. Quizzes... not so much.

Q: What should I do with my spare time?

A: First, check you haven't forgotten to do something; free time is a rare thing at this time of year. I'd highly recommend relaxing and taking a (few hours) break. As I've said before, multiple times throughout this column yet no-one responds, I'll say it again, burnout is NOT a good thing. Believe me...

Q: What in the \$&!@ is this?

A: I see your ternary diagrams reader, and I raise you this monstrosity: 

Again, if you're taking Heat Transfer and don't know what this^[1] is....oh....oh no. I'd tell you, but have you tried spelling it?

[1] 1. Psychrometric Chart [Internet]. Truetex.com. 2020 [cited 3 April 2020].

Available from: http://www.truetex.com/psychrometric_chart.htm

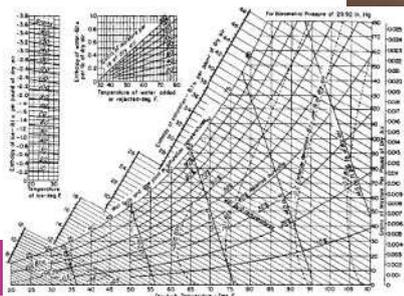


Figure 1: The graph that shall not be named

Q: Fave Dimensionless Number?

A: I mean apart from every ChemEng's best friend Re, I also love the Stanton Number. It's like the final boss of dimensionless numbers, containing Nusselt, Reynolds and Prandtl numbers. Dimensionless groups within Dimensionless groups?!? Yes please! (I really need a new hobby).

AND FINALLY

Q: What is corona virus?

A: -Checks date on this submission- Oh...that's some foreshadowing. Well, I guess that's already been answered now. Remember to stay inside, wash hands regularly and keep yourselves safe - OK? Now, where can I find some toilet roll...

ChemEng Love,

Uncle B xoxo

Got a ***burning*** question for Uncle B? Use [Social Media](#), or email: guilds.chemeng@imperial.ac.uk

DMCs

CORONAFEARS - WE'RE GETTING DEEP

BY KARYSHMA GILL (Y3)

I don't know if it's the best of times (because while people complain about lockdowns, my Imperial life has prepared me for this) or the worst of times (4 hours to load Panopto... should have just gone for them 9 ams). But, it's definitely the craziest of times. Things move so quickly and there's so much uncertainty in general, it can get very overwhelming very quickly.

It doesn't help that COVID-19 is all we hear about, and the constant barrage of information means we're all to an extent, anxious. And, for us science-y people, the uncertainty doesn't help as well. We like things quantified. We'll accept correlations, if we're in a bind, and even resort to making assumptions, but there needs to be an underlying mathematical relationship somewhere.

This makes this situation entirely unique - and entirely crazy - and we want you to know you're not alone even if this anxiety can make you feel like you are. As such, this edition will explore the current fears of some of our undergraduates, and attempt to deliver a perspective on how this pandemic has affected our student community.



My whole life, I've always known exactly where I'm going, but this step into the next stage of my life is a big one. On one hand, graduating is great – no more exams, or lectures or all-nighters, but on the other hand, now I have to be an adult. No more midday wake ups, no more summer holidays, instead I have to find a job and figure out taxes, One thing I loved about Imperial is the diversity we have here, I've made friends from all different backgrounds but now we're scattered across the world- who knows when we might all meet again?

Y4 UNDERGRADUATE

Exams are stressing me out so much. Living in a different time zone means I'm going to be sitting for exams at 3 am, which isn't ideal. There are 7 of us at home, so I can't even get a quiet environment and stable internet connections most of the time. I worked so hard this year and it's still not going to show.

Y2 UNDERGRADUATE

My mum's immuno-compromised and I don't know if she'll pull through. I lost an aunt last week, because all our nearby hospitals were focussed on COVID-19, and were at capacity, so by the time she was admitted, it was too late. Am worried this will happen to my mum, and I don't know how I'll cope if it does.

Y1 UNDERGRADUATE

I'm going to be fat if this lockdown and this virus continues. My life at the moment is studying for 2 hours, eating, studying again, and eating again. Though, the bright side is, I've been saving money since I can't buy bubble tea as much anymore.

Y3 UNDERGRADUATE

Internship's been cancelled. Exams still going on. Friends are all over the place and in different time zones. Mental health demons coming out to play. Think I might have corona - and waiting for test results, but meh at this point. Life just seems like one of those Spanish soap operas - it just seems very unreal.

Y3 UNDERGRADUATE

Was worried that this will go on till next year but, my astrologer says that this entire situation is because Mercury is in retrograde - and that it'll all clear up by May, so its all good. Am hoping it clears up because of the aliens though.

Y2 UNDERGRADUATE

IMPERIAL LATHER

SCRUBBING FOR SUCCESS

BY KATHRYN JAITLY (Y4)

If you thought that the Department was closed, think again. Nine members of staff have remained, using the undergraduate laboratory space to manufacture hand sanitiser for the IC Healthcare Trust.

All ingredients have been sourced by donation. Over eighty donations of IPA, ethanol and glycerol were received from three departments: Chemical Engineering, Materials and Bioengineering. With this, they were able to start producing WHO-standard sanitiser to meet Trust demand. As public profile of the activity increased ([1](#), [2](#), [3](#)), donations were received from industry... including 1000L of ethanol from Sipsmith Distillery.

This is not a straightforward activity, and all product has to meet stringent 'clinical standards' - something which led to difficulties with some makeshift suppliers (e.g: [Brewdog](#)). To ensure useful output, the ChemEng Team has implemented an SOP which complied with guidelines and utilised QC facilities in the Department.

Prof. Nilay Shah stated in an email to staff: "This was a genuine example of ingenuity, initiative and teamwork under pressure."

Sanitiser has been sent to Imperial College Trust hospitals, and "[they] have left us in no doubt about the importance of this work in (a) saving lives and (b) helping them to go about their work with more confidence."

Thanks to the team for their amazing efforts during the crisis:

Severine Toson, Pim Amrit, Richard Dixon, Parth Shah, Wenqian Chen, Colin Hale, Umang Shah, Andrew Macey and Eddie Hartrick (from the College Safety Team).



(1) BBC News:
[is.gd/wd5V6x](https://www.bbc.com/news/health-54567890)

(2) FT - though they named the team as chemists *sigh*:
[is.gd/LW2fIH](https://www.ft.com/content/12345678)

(3) #ICELather:
[is.gd/WuFupX](https://www.instagram.com/ICELather)



EXAMINATION RANT

+ ADDITIONAL GROUP CHAT CHAT

BY DOUGLAS LAU (Y3)

After an abrupt end to term, students were left in a state of limbo regarding the next stage of our education: EXAMS. Rapid escalations in death rates and measures to tackle COVID-19 have led to a mass exodus of fellow students returning home to weather this storm. With the knowledge that students are now located across the world, many global universities quickly implemented policies to reduce the impact of this unprecedented event on examinations (see [Open Letter](#)). Yet Imperial, the UK's most international university, remained strangely silent.

Our President, Prof. Alice Gast, initially announced that all examinations for the remainder of the year would be remote. Unsurprisingly, this was met with much apprehension, but also generated more questions than answers. Over the following weeks, concerns about various logistical and technological issues had not been addressed satisfactorily. Differences in time zones, lack of good internet, and government censorship have the potential to derail exam performance. The FAQs that the College initially put together did a surprisingly good job at deflecting questions and concerns (see FAQs). Instead of being accommodating, it appeared that Imperial was putting the burden on students to be accommodating of Imperial's exam policies. The only "out" granted to students was a Mitigating Circumstances claim, seemingly acting as the College's fallback policy. Run into technological issues with remote exams? Submit a claim. Exams are now at 3am? Submit a claim. While Mitigating Circumstances allow students to salvage their marks after exams, it does very little to alleviate student stress prior to exams. It adds additional bureaucracy to burnt-out students' workloads. Though well-intentioned, this system seems reactive rather than proactive; it is ill-suited to global catastrophe, as well as going against a tenet of safe design: eliminate your issues before you try to control them.

Whilst various other top UK institutions, including [Cambridge](#), [Manchester](#), and [Bath](#) rapidly adopted more accommodating exam policies to help students, there was little transparency to discussions surrounding examinations. The College initially did not appear to change stance; Provost Prof. Ian Walmsley announced in an email "the need to maintain the calibre of our degree provision" as a reason for the College's stance at the time. Students are facing international emergencies, away from family, locked in tiny flats in densely-populated areas. This comment caused outrage. Instead of promoting student wellbeing – [a problematic issue for Imperial](#) – it seemed to many that Imperial was trading student stress for clout. Unsurprisingly, this only served to add fuel to the flames.

In response to policy change across the country, Imperial students fought back. Scathing articles were released to public newspapers such as the [Times](#) and [Guardian](#). Many have slammed the College's decision to proceed with remote time-limited exams and have been calling for a "safety-net" policy or even the outright scrapping of exams (to be replaced by coursework). As numerous petitions and open letters circulated around College, it appeared that the Union was forced to re-negotiate with College. Based on Union negotiations using [survey data](#), the College backed down from their initial position and announced that a "safety-net" policy would be put in place. While this news is welcomed by the student body, many question the lack of transparency regarding decision-making by both College and Union, and the lack of representative student viewpoints at College meetings. Simply put: the Union was consulted about remote exam implementation since the beginning of discussions. If the Union represents the student voice, why did it take such a massive backlash and two pieces in national newspapers before the Union actually stood for the students?

This sluggish response has laid bare fundamental issues that plague this College. Firstly, to many students, this pandemic has reinforced the belief that student wellbeing is low priority. Prior to student backlash and the Union's subsequent intervention, every action taken by the College appeared to disregard students' mental health. Secondly, whilst well-intentioned, 'Mitigating Circumstances' is fundamentally reactive approach, which is not effective in situations where a proactive approach is warranted (such as a global pandemic). Lastly, communication between Imperial and the student body need to be improved. Lack of communication and consultation has fed student anger, leading many to feel abandoned. This crisis has made it painfully clear that these fundamental issues need to be addressed.

As Imperial currently alter their exam policies, the administration has demonstrated a willingness to listen to students. I am hopeful that this is a sign of change. Through deeper engagement between students and staff at all levels, we can make Imperial a happier place.



This is a new survey which means that everyone who has answered the previous one will need to vote again

Seen by [redacted]

oh so are the 1572 signatures going to be disregarded?

Wow if this is actually true lol

i guess i'm graduating on F[redacted]ING ROBLOX

ROBERT 1F
3:03 PM
All Inboxes ESUHSO - Distan...
we signed up for this...
technicalities regarding our virtual graduation. A recent board meeting came to the decision that we will be using the online website "Roblox" in order to provide a virtual world to host the Class of 2020's graduation. It's recommended that parents and students become familiar with this application beforehand. It is also required that students sign up using their district given school usernames.
Click here for access to the virtual graduation platform.
Thank you for understanding.
So embarrassing LMAOOO

Let's not be so hard on the people making the decisions, it's not like they're not making an effort 4:00 AM

It's just that I feel so distressed 4:03 AM

Heavily relies on Abs, Ashley and Shervin and whether they'll be on board ngl 1:55 AM

Yeah it seems like they didn't really have any say in any of the meetings and were just trying to soften the blow to us 1:55 AM

I think that's an excuse not to be held accountable on any side 1:55 AM

They wrote an email to everyone saying they supported the decision and gave input from students 1:55 AM

Which is a blatant lie or else they wouldn't have taken such a bad course of action 3:02 PM

Like they did for halls 3:02 AM

Everything they have said implied that [union] were just by-standers to the whole discussion

If it's true that UK time is gonna be mandatory... anyone else have 5am exams? 🤔 🦴

It's more like students have never really felt like the prime focus imo 6:25 PM

Business schools carrying on with closed book exams and relying on "academic integrity" 😂 16:48

Guillo-tine Quarantime
imperial students and the college 08:08

during this corona exam season 08:10

Yup I will be doing mine at 3am if this is true

Email the department and explain the time difference I think. It should fall under "hardship" 3:01 AM

6:11

Make first year 0% 8:11 AM

yeah? how does it work, are they going to be leniant to all of us? If not who? When will they tell us more. Is the year still going to count 7.5%, if so what measures have they taken to even out the playing field, who do they count as mit circ

Bath is the only uni I know of handling this sensibly 3:04 AM

They're effectively giving all their exams as coursework 3:05 AM

[All of IC Exposed]

Yeah my Wi-fi is ass I'm definitely gonna disconnect at least 3 times if it's completely online lmao

literally same 8:05 AM

yeah I agree open book would naturally mean they would want to make the exam more difficult

DMCs - v2

WE'RE HEADING EVEN DEEPER

BY KATHRYN JAITLY (Y4)

Coronavirus is scary. By the end of FYDP, two of my teammates had self-isolated, and one was refusing to come in. Who can blame them? This is scary. We're seeing lives up-ended, and we can barely leave our homes without fear of death - and I wish that was an understatement.

We now see ourselves in this alternate reality, seeking out any means of escape from the dystopia we see ourselves in. We were once students, and now we're desperately trying to make it through each day, one at a time.

However, as an undergrad, I take this time for granted. In the end, all that I will have is an anecdote about my degree and a potential activation of the 'no-detriment' policy, PG students and staff are badly affected. Most lab-based research has ground to a halt. At least I can Panopto and chill - what can research groups do during this time of crisis?

I therefore got in touch with a range of people around the department to figure out: 'How has coronavirus affected you?'



It is a really difficult time for everybody and especially for the students. In the first place, I didn't know if it was better to stay here in London or to go back to my family - you know, just to be all together. At the same time, I had to submit two important projects for my master and my progress for my master thesis, so having to take an extra decision made the matter worse. In the end, I decided to stay in London so that I wouldn't pose in danger my family and I wouldn't get distracted when studying for my upcoming online exams.

Even the online exams make me feel anxious: living in a tiny room (literally, no bigger than 8 m²) in London, studying intensively in the same room and sitting for exams in the same place makes it a little bit weird. However, I am trying to make it work: I have bought some plants to make the atmosphere better and I read only 1-2 articles about coronavirus every day-just to catch up with the latest news but simultaneously not to be negatively affected.

But what you see every day is frustrating as well. I go to the supermarket and people are afraid of being close to each other, they wear masks, gloves. In my country we say that: You feel like a 'leper'. When I saw that the very first day, I was shocked. Now, I can admit I have been used to it. However, facing this all alone, in a totally different country and considering that I don't know when I can go back to see our parents - it's really scary.

But I hope everything will be improved as soon as possible. And don't forget: stay home, stay safe, stay healthy and find ways to make your day better <3

MSC STUDENT (PSE)

The biggest effect of the coronavirus outbreak on PhD students is not being able to go to the College and losing access to our labs and offices. Luckily I had just about finished experiments, so I'm now actually quite enjoying having some time to process things and work on papers etc., although I know plenty of people are not in such a privileged position.



It's strange not seeing my research group on a daily basis, but we are having daily virtual coffees to keep in touch with each other and the transition of all meetings to Skype/Slack/Teams/Zoom (I've lost track of how many different video calling apps I've downloaded!) has been fairly seamless.

Being in the final year of my PhD, there is real concern about how this will affect finishing up, but the college has so far been very supportive and seem determined not to let this affect the awarding of degrees. Other than that, I'm trying to keep sane with plenty of baking and yoga – it's very tempting to lock myself away and work constantly but it's important to avoid getting into that kind of pattern, I think!

PHD STUDENT

Like many others, the situation for me has been unsettling and hard to deal with because of all the uncertainty. My group does primarily experimental work, so finding things to occupy ourselves has been challenging. Personally, I spend most of my day in an office anyway, but for the students and postdoctoral researchers in my group it has been a big change to have to work from home.

We've been trying to keep things as normal as possible by continuing with group and individual research meetings on Microsoft Teams. And one of the people in my group is working on a COVID vaccine project, which lets us all stay connected to the lab in some vicarious way.

Also, before I became a chemical engineer, I did a Masters degree in Epidemiology, so I am having a lot of fun second-guessing every decision the governments here and abroad make!

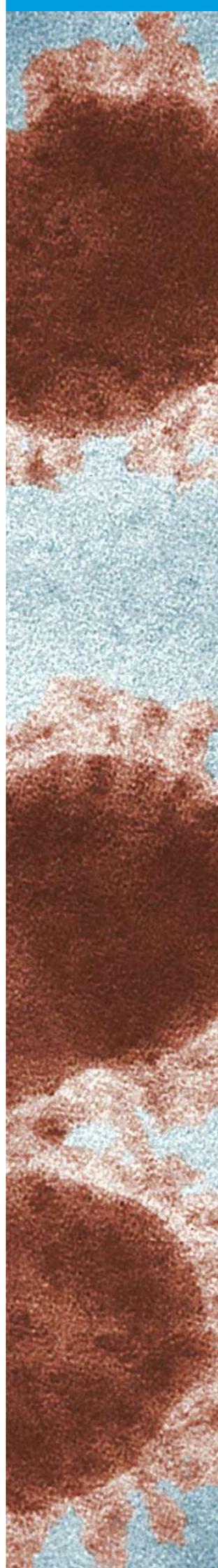
DR. KAREN POLIZZI (2ND YEAR IN DEPARTMENT)

The coronavirus is probably a once in a lifetime event, some of whose effects will be life changing for society and for many of us. Myself, like virtually all of my colleagues, have shifted into a 'work from home'-mode relatively easily. I hold weekly 1:1 with all my students and postdocs, regular web-based meetings with my industrial partners, and we run a fortnightly Team groups research meeting. Of course, the experimental work which is the cornerstone of our research activity has pretty well stopped now, so we have had to focus on paper writing, data analysis, reading etc. So we are, because of the internet, able to maintain a good level of ongoing productivity.

I was disturbed to hear from some friends in London last week who we going out EVERY DAY shopping using public transport. I wrote to them as follows, but I feel moved to share this viewpoint with the readers who may also know people who think social distancing does not apply to them. I wrote to my friends:

"Let me put in perspective where we are currently. On the 7th September 1940, London had the first night of the blitz bombing. It was called "Black Saturday" as over 430 people died that night. This week we had having a "Black Tuesday" followed by a "Black Wednesday", then a "Black Thursday" because it is almost certain that over 430 people will die every day in London, for probably another 14 days. So in short, every unnecessary bus you get on, shop you go to or door you touch is the equivalent risk as going out in the middle of a bombing raid in 1940. A random bomb or a random virus, both take lives indiscriminately. Your home was your bomb shelter, now it is your virus shelter! So stay safe, stay home"

PROF. DARYL WILLIAMS (34TH YEAR IN DEPARTMENT)





CAMILLE

PETIT

READER IN MATERIALS ENGINEERING, 2019 -

BY RAVI SHANKAR, SARA WEST, AND KAGISO BIKANE

It was a real pleasure to film Episode 8 of ChemEng Conversations with Dr Camille Petit, the leader of the Multifunctional Nanomaterials research group. Camille is a Reader of Materials Engineering and has been a prominent member of our Department for several years now. Her expertise lies in the design and development of porous materials for applications pertaining to sustainable energy and environmental remediation, such as CO₂ capture and conversion, chemical separations and photocatalysis. Such applications necessitate the materials to exhibit high surface areas and

porosity – a good example of an everyday porous material would be a household sponge that soaks up water.

She has rapidly established herself as one of the top early career researchers in her field, having published over 70 articles in the most prestigious journals such as Energy and Environmental Science, ACS Nano, and Journal of Materials Chemistry, with over 4200 citations. She has been a member of the leading scientific bodies such as the IChemE, the AIChE, the Royal Society of Chemistry, and the American Chemical Society.

In 2019, Dr Petit was awarded a prestigious ERC (European Research Council) Starting Grant worth €1.5 million, which recognises talented early-career scientists who show potential to be research leaders in their field. Most recently, Camille was named the winner of the prestigious 2019 Philip Leverhulme Award. The award, worth £100,000, recognizes 30 exceptional researchers who have made truly outstanding contributions to their field and whose work has garnered significant international attention.

It was a pleasure to have such an interesting conversation with her on the show and find out more about her journey through academia and the advice she has for both UG and PG students.



Could you tell us about your research interests?

Sure – my team and I work a lot with materials. We want to develop the materials that we synthesise in our lab to be applied in areas related to sustainability. We're particularly interested in materials that can act as filters for chemical separations or photocatalysts that can trigger reactions, such as the reduction of CO₂ to fuels, through harnessing sunlight. In some cases, we're looking for the best of both worlds and seek a material that can combine both, for example in CO₂ capture and photoconversion. Such applications necessitate the material to exhibit a high surface area, so we specifically focus on porous materials, which is the core theme of our research.

Could you tell us a bit more about the recent ERC grant you won?

Oh yes sure – this grant focuses specifically on our photocatalysis aspect of our research, where we are developing materials for solar fuel production. In other words, these are materials that can harness sunlight to convert CO₂ to fuels, such as methane and syngas, which are the building blocks for chemical synthesis in industry. Central to this theme will be the material, boron nitride, that we are very interested in and have recently published a proof-of-concept study for. We've demonstrated that it can act, not only as

an adsorbent for CO₂ capture, but also simultaneously as a photocatalyst, which was not known before. This material is very advantageous with regards to its tunability and from the fact that it's made from abundant materials. We really want to explore this material as a photocatalyst – no one has done that before. Doing that, we feel that we'll get to know more about the properties of the material that can allow it to be employed for other applications that we haven't considered, such as drug delivery for example.

You've established yourself as one of the leading researchers in your field – has there been anything that surprised you about your journey in academia?

I think the main surprise is the importance of luck in your journey! If I look at where I've come from and where I am now, I would say that it's often based on luck. That might not be such a comforting thought for someone who is rational and likes to plan and prepare a lot. Sometimes the luck can work in your favour, and sometimes it can go against you. But if you're prepared for something, you know you prepare a lot, you work hard, things may not go your way. But you shouldn't be despondent if that's the case as the next time will be your turn and you'll be able to reap the rewards.

Looking to future, say in 5 or 10 years time, what would you like to be remembered for or where would you like to be?

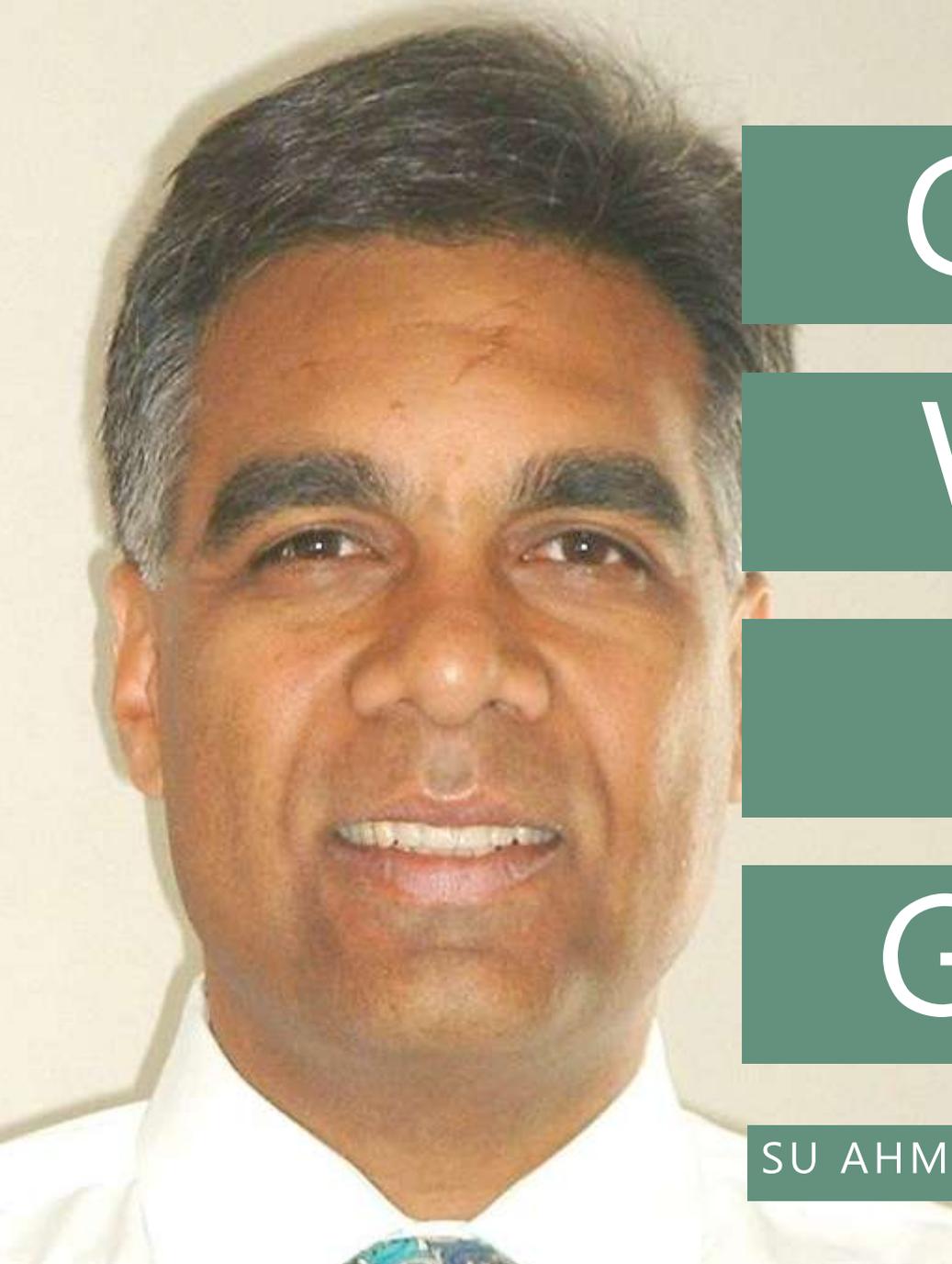
I thought I was done with these sort of interview questions! Just kidding - short term, say in 5 years, I think the idea would be to be able to answer the key questions that we've asked as part of our ERC Grant, which hopefully open 2 or 3 new themes or questions as a result for future work. In the long term, I hope that we can continue make progress with our industrial partners and be able to translate our research to even larger scales.

WATCH THE LATEST EPISODE

-or-

CATCH UP ON THE SERIES:

[js.gd/hVfq7B](https://www.youtube.com/watch?v=hVfq7B)



CHAT

WITH

A

GRAD

SU AHMAD, CLASS OF 1981

BY HIREN PANDYA (Y3)

BIO

Name: Su Ahmad

Job: Co-Founder and Vice-President of Tego Inc.

Humble Brags: Has been VP of AspenTech and lecturer at University of Manchester; created multiple start-ups; etc.

This week, our Alumni Officer Hiren spoke to Su Ahmad, a class of 1981 alumni, about his experiences since graduating and memories from his time at Imperial. Su is a former Vice President at AspenTech and lecturer at the University of Manchester, and is currently Vice President of the company he co-founded: Tego, Inc.

What has been your career path since Imperial?

I developed a strong interest in Process Systems, Design & Optimization during my BSc in Chem Eng, so I stayed another year at IC to do an MSc in Computing and then went to Manchester for a PhD in Chem Eng, specializing in Pinch Technology. This immediately led to me becoming a Lecturer there at the ripe old age of 25, to start a research & teaching career which lasted 5 years

and opening many doors ... and eventually the opportunity to be hired by AspenTech in 1990 and for which I moved to Boston, USA. This was perfect for taking further my interests in Design & Optimization into the industrial world - but not in the way I'd expected. My very enjoyable 12 years in AspenTech consisted of working in their various sales teams around the world and managing several business units. It was an experience to be in an American early-stage company during the tech boom of the 90s, to see it go from ~200 people to 2000 people within my first 5 years, and also go public on the NASDAQ in that time!

In 2002, I began to consider starting a company, so I started an enterprise software company with a close school friend in 2003. Risk Governance, Inc. (RGI) provided tools for assessing and tracking operational risks in medium to large corporations. The timing was good since much stricter laws were coming into effect in the US & EU for financial risk management for public companies. As it turned, RGI was soon acquired only 2 years later in early 2005. I was now hooked on the entrepreneurial bug, ready to move on to my next gig...

In Summer 2005 I cofounded Tego, Inc., (tegoinc.com) a company developing a new kind of RFID semiconductor chip: wireless, battery-less, ruggedized and therefore suited for heavy industrial applications. The TegoChip is now standard in all Boeing and Airbus aircraft. Tego has since focused on industrial asset tracking software solutions using mobile apps/devices and cloud software - and keep in mind that we created these ideas and started building this technology before there were iPhones, mobile apps or iClouds. Tego has over 100 patents and is regarded amongst the most innovative companies on the world of IIoT ("Industrial Internet of Things"). I work in Tego to this day, mostly in sales and creating customer success.

What are the best aspects of your role?

I love seeing different kinds industrial applications for technology show up almost every day, and creating success for customers with this, even after 15 years of working in this area.

What are the biggest challenges you've faced since graduation?

As a repeat offender of company startups

requires nearly always expecting to go without a salary for a long time in the beginning - even a few years. For me, these periods occurred when my wife & I had 4 small children and a fat mortgage! I suspect the stress of dealing with everything at work & home in these situations caught up with my health eventually and led to my having brain surgery a few years ago. Luckily, I recovered quickly and been in good shape since then.

What skills and experiences have aided your career?

Non-stop curiosity to know how things work (or not work), not only engineering but also in business; enjoying the sales experience - there's always something new!

Which learning experiences have been most useful to your career since graduation?

Modules: design projects each year.

Experiences: industrial placements in summer vacations (Exxon & ICI in my case).

Courses: Mass & Energy Balances, Thermodynamics; Unit operations.

Beyond academics, what else were you involved in at Imperial?

Swimming; Wine Tasting Society; Real Ale Society; India Society; sightseeing/weekend trips outside London

What advice do you have for every student on the course?

It's a good idea to build and keep a good network of contacts in your department, residence hall and in the student societies. On the other hand, spend some time every week on other activities outside the academic work, eg. sports, societies, cooking, gaming, movies, etc.

QUICK-FIRE QUESTIONS

Pineapple on pizza? Yes.

Favourite lecturer? Prof Sawistowski

ABBA: yes or no? Yes!! (why even ask?)

Worst module? Accounting / balance sheets

Best superpower? UK...

Favourite ChemEng year on the course? 2nd (on three-year course)

Final Year Design Project in a single word? Terrific.

GOT MORE QUESTIONS? Get in touch:

[linkedin.com/in/suahmad](https://www.linkedin.com/in/suahmad) or

su.ahmad@yahoo.com

THERE WAS TOO MUCH GOOD CONTENT IN THIS INTERVIEW, SO WE'VE PUBLISHED THE ARTICLE ONLINE. READ HERE: [IS.GD/BVLQR5](https://is.gd/BVLQR5)

PUZZLES

HANG ON... HAVE WE BECOME... ORIGINAL?

THINKER

BY LOUIS MARTINE

How much would it cost to fill the pool in a day?

$$\Delta P/\rho = 0$$

Pipe fittings: 2x 45° std elbow; 1x globe valve open; 20x union and coupling

$$e = 0.046 \text{ mm}$$

$$\eta = 70\%$$

Water cost = £1.9/m³

$$\Delta z = L = 200 \text{ m}$$

NPS 1

Pipe thickness = 3 mm

$$1 \text{ kWh} = \text{£}0.15$$

$$\mu = 1 \text{ mPa}\cdot\text{s}$$

$$\rho = 1000 \text{ kg/m}^3$$

12 m

12 m

1.2 m

FOUND THE ANSWER?

We are giving away **three £20 Amazon vouchers** - one per quiz section. Splash the cash on loo roll and show off to your mates.

Email your answer to guilds.chemeng@imperial.ac.uk to be entered into the ***PRIZE DRAW***.

WORDSEARCH

BY KATIE MAWDSLEY

THEME: EXAMINATIONS

D N R Z F T H J Z N I G E B Y A M U O Y A Z V
I F Q K A N S F I R O T A L U C L A C C D H O
L D L B J L Q I N V I G I L A T O R P T E N W
J R U N A I O K N C X W F F U N C J L I K Y K
V X F I V E M I N U T E S R E M A I N I N G X
L U V M Q C Y H N C U S V B A M V T A N S D L
A A T I M E T A B L E V C O P A N V L I S R Z
X Y Z U R E V I S I O N W V A M N P P L E M P
H X M T E E H S A L U M R O F H T Y G C C F U
Z A B E X A M M B R V W D P R E W S N I C P K
T N L N O I T A N I T S A R C O R P I D U H T
I E S A C L I C N E P R A E L C Q P T V S Y R
M U K K J M E M O R I S E G N I K L A T O N M
E H K C K F S G A T Y R U S A E R T E H S O O
W O S T U D Y N Q S B G S T R E S S S H C M N
S E F H W G A L L N I G H T E R G L U G P X Y

Words are hidden in the following directions:



WORDS TO FIND:

COCURRENT

ALLNIGHTER

CALCULATOR

CID

CLEARPENCILCASE

EXAM

FIVEMINUTESREMAINING

FORMULASHEET

INVIGILATOR

MEMORISE

NOTALKING

PROCRASTINATION

REVISION

SEATINGPLAN

STRESS

STUDY

SUCCESS

TIME

TIMETABLE

TREASURYTAG

YOUMAYBEGIN

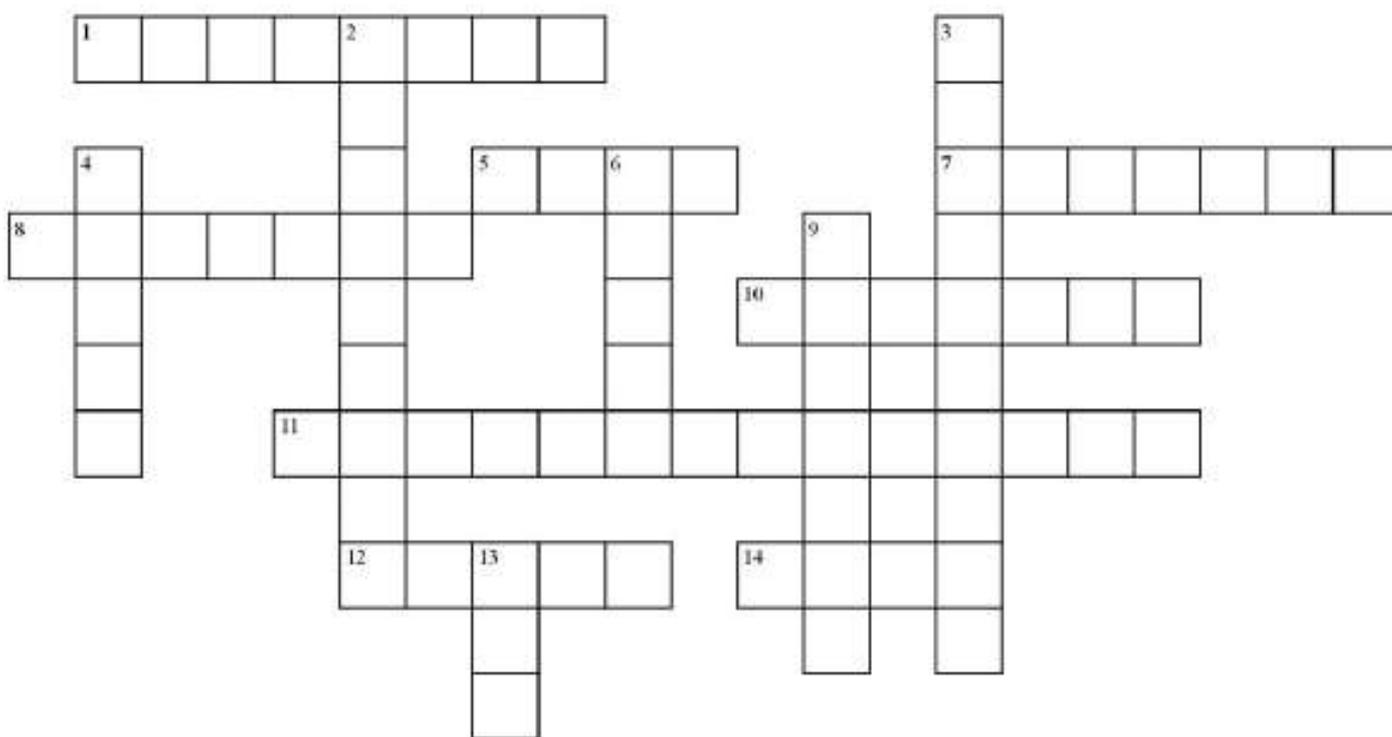
Note: this puzzle was created last September. It has not aged well.



CROSSWORD

BY KATIE MAWDSLEY

THEME: CHEMENG STAFF (BY SURNAME)



ACROSS

1. First name = last name [8]
5. Head of department, has all the power [4]
7. First name: Amparo [7]
8. THINKS he outperforms all the performers at the Talent show [7]
10. Rhymes with palette [7]
11. Even if we made the clue really easy here, you still wouldn't be able to spell it [14]
12. Outperforms all the other lecturers at the Talent show [5]
14. Only ever been seen in the Pilot Plant [4]

DOWN

2. Director of Undergraduate studies [9]
3. DOCO [10]
4. The masculine word for small in French [5]
6. The guy who fixes everything [5]
9. UG office staff, shares the same initials as the famous footballer who married Posh Spice [7]
13. _____ Wizz! [3]