the materialist

Bunt

Mai 2023

Inhalt

Vorwort

SMW Inside

Bunt

Science and Industry

Studium

Impressum

Editorial

von **Aline Maillard**

Hallo Grüezi!

Zack! Das Semester ist schon fast zu Ende und der Frühling ist noch immer nicht wirklich bei uns angekommen; der liebe April macht ja bekanntlich was er will. Jedenfalls schreibe ich diese Zeilen, gucke aus dem verregneten Fenster raus, schlürfe meinen Tee und bin ganz froh, können wir euch mit dieser Ausgabe zumindest etwas Farbe in den verregneten Alltag bringen. Denn diese Ausgabe steht unter dem Motto «bunt».
Und falls jemand komplett investiert in mein Laptop-Drama (siehe Editorial letzte Ausgabe) ist, ich habe jetzt einen neuen Laptop; bei dem ist 2 Wochen nach Gebrauch der Bildschirm ausgestiegen. Also so mal gar nicht bunt. Deswegen tut es mir gerade doppelt gut, auf diese farbenfrohe Ausgabe hinzuarbeiten.
Aber zurück zur Ausgabe: Es gibt wieder interessante Berichte, spannende Artikel von PhD-Studierenden und natürlich eine gesunde Prise Lockerheit mit lustigen und doch ein wenig informativen Berichten.

Viel Spass beim Lesen und Farbe-Tanken!

Eure Chefredakteurin
Aline

Terminkalender

Mai

12.05. Cocktail Stamm
17.05. I (S)AM curious
18.05. Auffahrt - unterrichtsfrei
19.05. Soccer Cup
25.05. Seminar: Organic Electronic Materials for Biosensing Applications
29.05. Pfingsten - unterrichtsfrei

Juni

02.06. Semesterende

Präsidial

von **Aurél Gerber**

Liebe Mitstudierende

Wir sind wenige, dennoch fühle ich mich stets von bekannten Gesichtern umgeben und darf mich an eurem regen Austausch und fleissigen Eilen erfreuen. Es ist wichtig, sich bewusst zu sein, dass dieses gemeinsame Leben und Erfahren zu einem Herzstück unseres Studiengangs erblüht ist. Somit ist es grossartig, dass unsere Pläne, diese Kernidee auf die Ebene der Vereine und des Departements zu erweitern, erfolgreich waren. Zeuge dessen dürfen diejenigen sein welche am «I (S)AM curious» Plenum teilnehmen. Das ist aber erst der Anfang einer gestärkten Beziehung zum SAM (Scientific Staff Assosciation at the Department of Materials), welcher die Interessen der PhDs am D-MATL vertritt. Seid stolz, euren Beitrag zu diesem Umfeld geleistet zu haben, denn ohne euch gäbe es diesen Verein so nicht.

Mit Freuden
Aurél

HoPo-Log

von **Aaron Locher**

Hallo zusammen,
Nun ist ein guter Monat vergangen und man könnte sich fragen, ob denn die vielen Pläne vom letzten HoPo-Log in die Tat umgesetzt worden sind. Als Hochschulpolitiker habe ich natürlich eine passende Antwort auf Lager: «Gut Ding will Weile haben». Doch Spass beiseite, freudig kann ich euch berichten, dass unsere Pläne langsam Früchte tragen und das eine oder andere schon in die Tat umgesetzt wurde oder in der Planung ist.

So haben wir mittlerweile einen regen Austausch mit unserem Mittelbauverein, dem SAM, und versuchen euch möglichst das Beste von beiden Welten zu ermöglichen. PhD-Studenten werden neu ganz offiziell an unsere Stämme eingeladen und im Gegenzug seid ihr alle herzlichst zu den Material-Kolloquien eingeladen. Das Kolloquium hat jeweils einen externen und internen Referenten, so könnt ihr die Forschungswelt der Materialwissenschaft genauer kennenlernen. Eine weitere Möglichkeit, wie ihr die Forschung des Departements kennenlernen könnt, ist mit unserem Event «I (S)AM curious», welchen wir gemeinsam mit dem SAM auf die Beine stellen. Dort könnt ihr die verschiedenen Forschungsgruppen und ihre Projekte kennenlernen und mit den wissenschaftlichen Mitarbeitern des Departements (PhD-Studierende, Postdocs, Professor*innen und weitere Mitarbeiter*innen) ins Gespräch kommen.

Von Seiten des Departements ist nicht sehr viel passiert. Es gab weder eine UK noch eine DK (wem die Abkürzungen spanisch vorkommen, kann in der letzten Ausgabe nachlesen, worum es sich handelt ;)). Doch natürlich rasten wir nicht, so würden wir nur rosten und wie uns Materialwissenschaftler*innen bekannt ist, führt dies nur zu Schwachstellen und Schäden. So entwickeln wir mit den Semestersprechern ein für euch angenehmes System, wie wir ohne grossen Aufwand periodisch die Vorlesungen während des Semesters und für kommende Generationen von Materialwissenschaftler*innen verbessern können. Dazu versuchen wir, den Austausch zwischen den

SMW und dem Departement wieder aufzubauen, da dieser stark unter der Covid-19 Pandemie gelitten hatte. Mit einer guten Kommunikation können wir umso einfacher und schneller den Studienalltag verbessern und anpassen.

Beim VSETH bleibt man natürlich auch nicht stehen, es kommen und gehen Events am am fliessenden Band. Es wird geplant, getüftelt, diskutiert und gefeiert. Solltet ihr Interesse daran haben, bei einem der Events, AGs, oder Organisationen mitzuhelfen, könnt ihr euch natürlich jederzeit bei mir melden. Ich helfe euch gern, die richtige Ansprechperson oder Website zu finden. Auch bei uns im SMW werden fleissig die Stämme geplant, Events mit anderen Fachvereinen organisiert oder zum Beispiel der FS4S neustruktuiert, um euch eine hervorragende Studienzeit zu ermöglichen. Wir sind euch für eure Inputs und Kommentare in der Oster-Umfrage dankbar und setzen uns daran, euren Ideen und Sorgen nachzukommen und eine Lösung oder Antwort zu erarbeiten.

Ich freue mich auf den Semesterabschluss, da uns bis dahin noch zwei weitere coole Stämme und Kolloquien, viele Events des VSETH und spannende Vorlesungen und Gespräche erwarten.

Euer HoPo,

Aaron

Noot noot - Challenge 2023

by Ý Vi Thach

ETHZ vs. EPFL, 25 girls and 25 boys from each uni, and lots of competitions, dancing, stickers and tattoos (and not much sleep): The 31st Challenge went from 30.03. to 02.04. and had the penguin as the mascot ("noot noot" was our call). This year, 9 out of 50 challengers and one organising member were from D-MATL!

During the event, points could not only be acquired in big competitions on the snow slopes and the Olympic games, but also through mini-games/ challenges, a costume contest and during parties every evening. Also, the weather itself was a challenge for all of us, since races had to be cancelled and the competition program had to be adapted. In the end, the winner is ETH Zurich (defending champion), with 4 of our MATL-students winning an award! For sure, it was a once-in-a-lifetime experience (including the pranks from the alumni, e.g., getting hit by a kayak while sleeping), especially as a challenger, when we were fighting and cheering for each other, no thought of giving up, and finally, when we celebrated and are still maintaining the connection and friendship.

The selection of challengers began already in 2022, e.g., through the Challenge run, battles on stage and sports competition. The Challenge place was unknown to the challengers until the departure on Thursday morning: Sportbahnen Melchsee-Frutt. Right after the departure, we danced so hard that random kids joined us. Then came the train challenges (not easy at all). Apart from the mini-challenges, e.g., collecting paninis and drinking while doing a handstand, some transportation through a row of challengers had to be carried out in the train hallway: first, an onion only with the mouth, then, one challenger after another over our heads. When meeting with the challengers from Lausanne, connecting challenges as well as games in small groups were on, including transporting hula hoops through a chain of challengers with tied hands. When we arrived at Sportcamp Melchtal, a DJ-truck was already awaiting us at the spot where later a jacuzzi would be set up. Sleep was very rare; we were woken up early by loud music. On Friday, snow competitions like slalom and ski run were planned, which had to be aborted due to too much storm and rain. The hot-point on the slope, where it was meant to be a place to chill, play volleyball, eat and drink or dance to the DJ, was also damaged. The alternative plan was to compete in some fun "Olympic games", including wrestling in whole-body bubbles. In the evening, the costume contest was on: A pair of challengers from each university had to present in the same topic. The crowd went crazy sometimes. Past organisation committees could also participate. That was when we witnessed the crew from 1999 as the Flintstones!

Saturday's weather was a bit nicer, so we did the inferno: All female skiing challengers were racing downhill, and this was the same for the categories male and snowboarders. The other race was penguin sliding: carrying a tyre uphill and sliding down on our bellies. That night, we had a fancy dinner and an award ceremony with speeches from our rector and some sponsors. I was then so proud of my friends; challengers of our department, and four of them on the winners' podium. The winning university of the Challenge 2023 was announced at the party. It was us, by the way, once again, and we went craaazy! Thereafter, it was the moment when rivalry was gone, and we had such fun times with the challengers from Lausanne.

Sunday was already the last day. We went on the slopes, sliding downhill, playing volleyball, chilling in the SUN (finally there!) and dancing to the DJ who composed the song that was chosen for this Challenge. The celebration wasn‘t over then as the party on the train was the main rave. Train stations weren‘t safe, flash mobs and dances went on everywhere we went. It was so fun that there were some nice alumni (who didn‘t prank us) accompanying us, keeping up the mood, keeping us singing and drinking. Maybe those were the same alumni after all, who knows...

When thinking back, I wasn‘t really a fan of the Challenge first, to be honest, especially of the rites and selection challenges. During the Challenge, I was rather grumpy since I am a person who needs lots of food and sleep, of which I didn‘t get much. But after the competitions, when we were celebrating together, I realised that I was glad for this experience, having withstood the Challenge and made so many friends. I am proud of them all, challengers, helpers, organisation committee. Huge achievements from the OC and the volunteers (THANK YOU!). From now on, I can join each Challenge as an alumna, either annoying or bringing joy to the challengers, depending on the mood (& food). In the end, these times are the ones I will be thinking of when I reflect about my days in Bachelor at the ETH Zurich. Noot noot!

Quiz: How many times was “challenge” mentioned in this article? How often were homeoteleuta intended?

Pictures: Ý Vi Thach, Challenge 2023

Colours of Running

by **Dan Vivas**

Agony. Pain rushing through the muscles in your legs. Cold winter air freezing your lungs. But we love it. Humans are weird animals, but especially when it comes to sport. We chase balls, ride on other animals, or throw ourselves down snow slopes with a couple of sticks. Sports have grown quite complex with the years, but running seems to have kept its nature. From the moment we knew how to walk, we wanted to run, to reach our surroundings faster, to chase, to be chased.

Running is a sport with many colours to it. Let us imagine an LMW+ training. We meet, Swiss punctuality ruling, small talk and discuss what awaits us, an interval training. Black. As if held by a magnet, the first steps seem impossible. Do we really have to start by running? But suddenly you feel it, Red. The blood rushes through your body, the long to-do list in your brain paused, and we start enjoying it. Mental health is a first reason to run. In a world filled with screens and external inputs, we all need to find that moment to connect with your body and disconnect from our surroundings.

The training continues to the intervals, Yellow. Uphill, both at a physical and mental level you ask yourself why are you doing it. You might know that mental health requires a healthy body, but it takes quite a bit of mental strength indeed. Green, you surround yourself with nature and push until the last meter of that interval. It takes time, but knowing that you are fit, that you can catch the bus before it leaves or run up those stairs for no real reason, that strength is also mental strength to push one throughout the day. Purple. The LMW+ trainees finish the intervals and head back. At that point we are all one, no matter your times that day or how many trainings you have attended, we will all end dead tired at the same place.

As runners we are social antisocial creatures. However, sharing the run with a group of students will get you the motivation needed to start running, and reach all the colours!

Why not try? Come next Tuesday at 17:45 for interval trainings or Thursday at 11:45 for a chill run. Meet us in front of ASVZ and enjoy the nice weather that is to come (hopefully).

Colour in Storm

by **Leonor Thorp**

This poem is written with the idea in mind that colour can exist in many more ways than in the archetypal form of a colour spectrum. Confronting the theme of “colourful” made me urgently seek out a phenomenological depiction of the way life is tinted with colour. This poem is colours seen by a storm. The storm’s elements spell out what colours their world. What these elements are and what they mean by what they say, is open to individual interpretation.

The shape, shapes and forms toughen themselves as they meet. Tension forms. Then they break apart. Unfortunately. Suddenly, they don’t seek. The connection. In eternal identity. Lost fragile shards of souls. Mingling. Meeting. Crossing paths. They’ll part. And reconcile.

Always.
Collide.

When the crack adorns the sky.
When the creatures don’t speak that crawl all over this world.
A silence. So powerful.
And beautifully adjacent.

Then the sky is torn open:

On this day, they drop in iridescent multitude.
They cover the ground.
They are feeling. They are sound.

"We are the sorcerers.
Little prisms that fall from the sky.
When we are one,
and happen to turn our faces angled toward the sun,
we create the bow you delight in."
I stick my tongue out to catch just one reflecting bead.
Then:

Palpable friction splits the air.
A current. Chaste warmth. Cruel heat.
Vicious delight.

Never picking a spot to slash the scapegoat.
Until the very final second.
When it strikes.
Deciding.
Relinquishing its corked-up sigh.
Not a moment too soon.

A little while later:

"Meet me where we all come together."

They whisper ever so quietly.
Excited at the prospect of seeing them,
I watch and yawn.

How do I know I will never reach them in time?
Before me. After all this time. Yet again. It goes off:

The lake laughs. It like any other pool.
Just another puddle.

“I am the reflection you live for.
You die for.
I am your true surface.
Your refracting, glistening mirror.
When sun shines on me,
I thrive.”

I can’t stop myself and unleash the giggle.
As it comes tumbling out,
I stifle the smile that wants to follow suit.
If I told you of the absurdity,
you would understand.
If you were held captured in that moment.
You would find yourself,
laughing on the floor.
The spectre spanned the earth a long while ago,
and I imagine it spreading.
Further.
To every lost body that is still left drifting in this universe.

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The Colors of Pride

by **Aline Maillard**

We write the year 2023. One could think that over 3000 years after a guy stumbled upon a burning bush and got all excited, humanity has had time to evolve.
Well, yes and no. The fact that I'm typing this on a phone (busy days lately) and you're able to read it on paper or, even crazier, online, shows that we did evolve. However, there are still communities that have to fight for acceptance and have to deal with the malice of others. Which is baffling, given that indifference would cost so much less energy than actively being mean to someone. But where's hate there's also love. PolyUniQue (www.polyunique.ch) is a Zurich universities organization for anyone associating with the LGBTQIA+ community. And of course, their logo is in rainbow colors. And now we're nearing ourselves the inquiry of this article: Where did the pride flag come from?

The origin of the pride flag is credited to Gilbert Baker, an ex-US military soldier, who taught himself how to sew after his honorable discharge in 1972. He was approached by Harvey Milk, an at that time openly gay political official in California, to design a flag for the San Francisco "Gay Freedom Day Parade".

And so, the flags flew for the first time on June 25th, 1978. There were several theories and stories about his original inspiration for the design that is in the end a lot of colors and a lot of straight (ha, the irony) stripes. He associated the colors with, from top to bottom, sex, life, healing, sunlight, nature, magic, serenity, and spirit (at least according to Wikipedia).

Don't misunderstand me; it's often the simplest ideas that have the biggest impact. Just think about how graphene was first discovered: Scribbling something with a pencil and then using a scotch tape to peel off one layer; et voilà graphite becomes graphene.

Fig. 1 The original pride flag design of 1978

Tragically, in November 1978, Harvey Milk got assassinated, resulting in rising demand of his commissioned pride flag. The 8 colored stripes however were soon reduced to 7, since the pink fabric was not readily available at that time and could not keep up with the high demand. A year later, the flag lost yet another color; Baker had a big decoration project planned for the city's street lamps and saw an even number of colors more fit for the job. So, he merged turquoise and indigo into blue (for all the non-color affine people: he merged blue and blue into blue).

Fig. 2 & 3: The 7 striped version and the still commonly used 6 striped version of the pride flag.

Up until now, there are several variations of the pride flag, but certainly the 6 colored rainbow flag is one of the most prominent. It was even made into an emoji in 2016. And isn't it wonderful, how 6 different colors in the form of 6 simple stripes can say so much? A sign of pride, love, happiness, inclusivity, and complete disregard for colorblind people. But in all seriousness, June will be Pride Month again, and this year, Zurich will have its 29th Pride Festival. So, if you want to see a lot of colors, looking out the windows in the next few weeks might just do the trick.

The Iceberg of Colours

by Stefan Schären

It is quite a neat feat that everything containing electrons (i.e., anything that matters) interacts in some way with electromagnetic radiation. Thus, as soon as living things figured out how to perceive light, their life expectancy dramatically increased – being able to see things before bumping into them provides an essential advantage. Sadly, the average human has grown too accustomed to their vision and has stopped thinking about all the antediluvian physics that lie behind such an abundant thing as colour. But fret not! If you are in need of a quick summary of how colours are created, you shall find them in the most digestible form possible: As an iceberg meme.

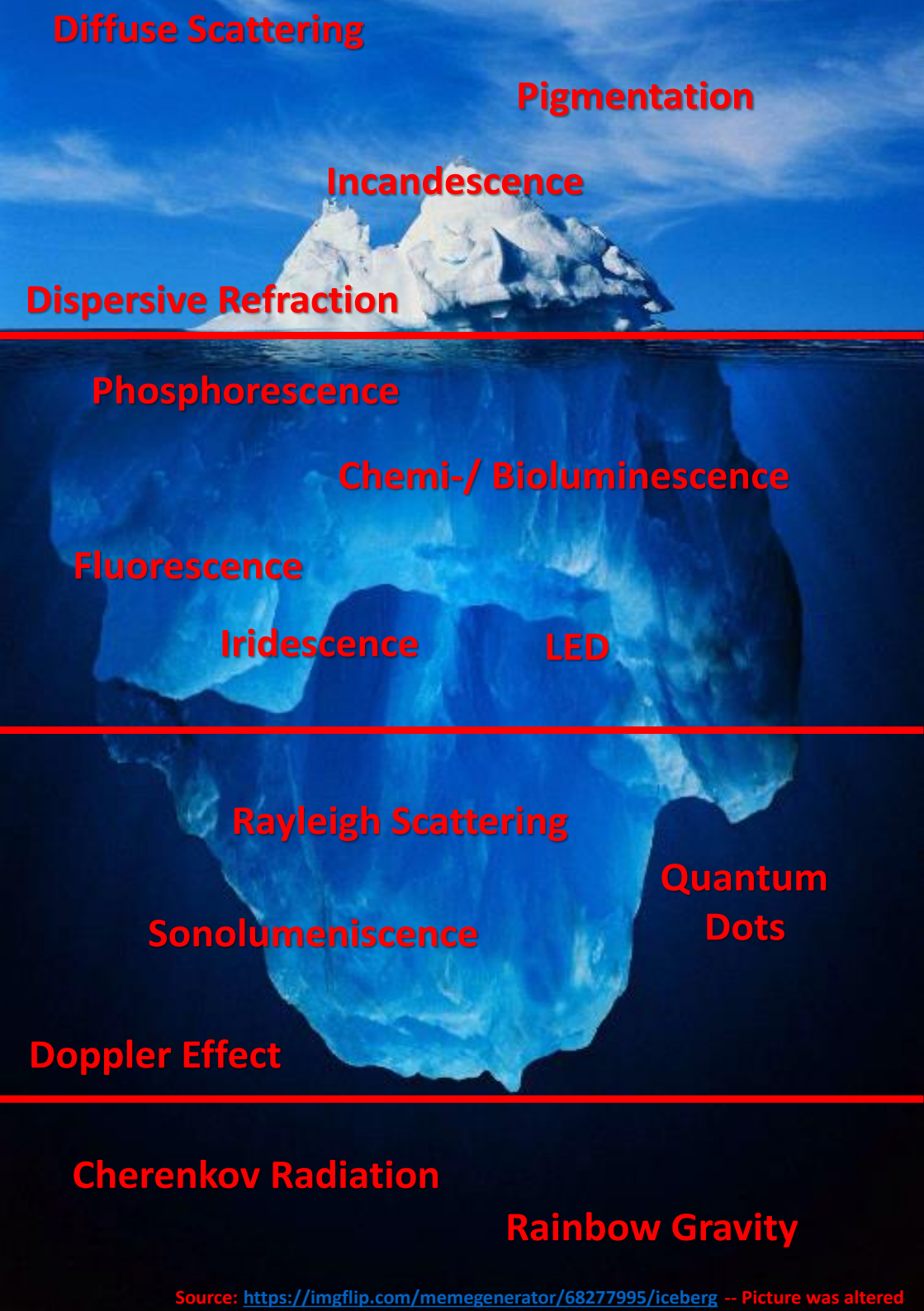
Surface Layer

Diffuse Scattering

A very crude approach to colour creation. Take all incoming light, average them and send them back out in all directions. The only thing diffuse scattering can achieve is to appear white, and maybe different shades of grey if it tries really hard. It happens every time light shines on a system that has elements in the size-range of visible light, but forgot to order them in a meaningful way. Examples are clouds, snow, cracks in glass, and many polymers.

Transparency

Honestly, diffuse scattering at least tries. Transparency is what happens when the system forgets to interact with light in the first place. This usually happens when the system is disordered and its elements are a lot smaller than the wavelength of light. Examples are glasses and gasses.



Source: https://imgflip.com/memegenerator/68277995/iceberg -- Picture was altered

Pigmentation

Probably the main reason why spring and autumn are such colourful seasons. If light hits a material, it can either be absorbed, transmitted or reflected. Consequently, if certain wavelengths are absorbed and others are reflected, the material will appear coloured under white light. This effect can be traced back to the electrons: Usually, they are happy to do as little as possible – but when they encounter photons with just the right frequency, they become very excited and eat it. Soon after, they regret this decision and try to go back to how things used to be – naturally, that does not bring back the photon. While this sounds traumatic on a subatomic level, it causes a lot of minerals and organic compounds to have beautiful colours.

Incandescence

The original way of colour production. Heat things up a little and they glow. Make things really hot and you have enough white light to irradiate a planet. The mechanism behind incandescence is a bit of a mess, as it compresses many mechanisms into one phenomenon. In a very hand-wavy approach, you could state that thermal energy is used to excite electrons, and excited electrons are used to create photons. With higher temperatures, the photons will have more energy as well, which shifts their frequency higher and higher. Warm things are red, hot things are white and blazing things are probably cancerogenic. We will leave it at that – for if you dig too deep into thermodynamics, you will notice that things are defined by themselves and you will become mad. It's turtles all the way down!

Dispersive Refraction

The thing fans of Pink Floyd wear on their shirts. Depending on the wavelength, waves can have different propagation speeds through a material. If white light hits such a material, the different wavelengths refract by a different angle and separate in a rainbow-like fashion. Examples of this would be prisms, jewellery and, well, rainbows.

Daylight Zone

Phosphorescence

The thing phosphorus does not do. Phosphorescent material can be charged up by white light, and as soon as the light source perishes, the material starts to glow for several minutes or even hours. Such materials are classically applied in things that should glow in the dark, like watches, exit signs and the eyes of horrors that loom in the shadows. As in pigments, this effect can be traced back to excited electrons falling back to their ground state and emitting photons – however, the way back is made more difficult by some quantum mechanical shenanigans, which causes the relaxation to happen only slowly. A cool life-hack: If you coat your phosphorescent material with some radioactive materials, the radiation causes them to permanently glow. But no need to worry – most of today's glowing watches use short-ranged radiation only. As long as you do not eat them, you are fine. Probably.

Fluorescence

The thing fluor does not do – chemists are really bad at naming things. The effect is similar to phosphorescence; however, the electrons almost immediately relax after the light source is removed. The effect is that you can create materials that glow when they are exposed to certain light or radiation. A common example are the cool clothes you wear in discos, that glow brightly when they are exposed to blacklight. Also, here the neat life-hack with radioactivity applies – you even get a stronger glow than with phosphorescence, which, of course, is readily exploited by watchmakers too.

Chemi- and Bioluminescence

The thing phosphorus does. While sounding similar to fluor- and phosphorescence, the striking difference is that chemiluminescence produces light due to a chemical reaction – it does not need an external light source to excite its electrons. If such a chemical reaction is employed by an organism, the effect is called bioluminescence. A common chemical encountered in such organisms is luciferin, an enzyme that glows when oxidised.

Iridescence

More or less the opposite of pigmentation. Whereas pigments produce colour by filtering out certain wavelengths, iridescent objects are specialized in only reflecting a small range of wavelengths. This rather neat trick causes butterflies, bugs and peacocks to have brilliant colours, and is the reason behind why soap bubbles look funny. The base idea behind iridescence is Bragg reflection and the exploitation of positive interference. However, I personally feel to have encountered Bragg reflections in every other material science course (similar to the Hallenbad Uster or the titanic), so I will not provide further details.

LED

The gamers' way of colour production. This is the first method in the iceberg that is purely man-made. The main idea of LEDs is to convert electric potentials into photons of well-defined frequencies – a phenomenon called electroluminescence (interestingly, before the light emitting diode, light emitting capacitors were discovered that do this as well. However, they were not brilliant enough to get big). But what genius mechanism lies behind the LED? Basically, it boils down to exciting electrons and letting them relax again, under the emission of a photon – as does every other light producing mechanism discussed so far. The difference being that LEDs employ the bandgap of semiconductors to do this, whereas the other mechanisms mainly use excitations of different atomic and molecular orbitals.

Twilight Zone

Rayleigh Scattering

Why is the ocean blue? Well, it reflects the colour of the sky. And why is the sky blue? Because it reflects the colour of the ocean – or at least, that is what my parents used to tell me. In my advanced physics courses, I realized that I had been bamboozled: Actually, the sky is blue due to a phenomenon called Rayleigh Scattering. This form of scattering always occurs when light hits atoms or molecules that are much smaller in scale than the wavelength, and is stronger for shorter wavelengths. Since blue has a shorter wavelength than red, blue light is scattered more strongly in the atmosphere, whereas red light travels straight. This causes the sky to be blue (we see the scattered part of the rays that hit the atmosphere) and the evening and morning to be red (we see the non-scattered part of the rays). Quite beautiful.

Quantum Dots

The principle behind old screens, back in the days where fax machines were a common sight and TVs could spontaneously implode. The screens of old TVs were covered in triplets of so-called quantum dots – little points made out of phosphorus material, that glowed red, blue or green when excited with an electron beam (yes, the phosphorous is fluorescent in this case). In the back of the TV, a cathode was used to create said beam – using magnetic fields, the beam was then redirected to subsequently hit the quantum dots that were required to generate the illusion of a colourful picture. Honestly, this principle is much cooler than modern LED technology – and you were able to play snake inside the teletext.

Sonoluminescence

The strangest form of luminescence, where light is produced using soundwaves. If tiny gas bubbles are suspended in a liquid and hit with ultrasonic soundwaves, they rapidly expand and contract before popping – and as soon as they pop, the energy stored in the surface is released as heat, sound and light. Science does not really know yet why popping bubbles creates light. Snapping shrimps on the other hand do not really care about theory and are using this phenomenon to create lightning and very loud booms with nothing but their claws. Apparently, Zeus has been mingling with the crabs as well.

Doppler Effect

Rather niche, but it is technically possible to perceive colours differently by merely moving. If an observer moves against a propagating electromagnetic wave, the wavelengths tend to get shorter (blue-shift), if he moves with them, they tend to get longer (red-shift). This implies that a jogging person will see the world in different colours than one standing still – although only by a miniscule amount. It also means that, technically, a person jogging fast enough could enjoy seeing his favourite radio channel.

Abyssal Zone

Cherenkov Radiation

Everybody knows about the sonic boom – if a particle is faster than the speed of sound, its sound "stacks up" at the wavefront and is heard simultaneously as soon as said wavefront passes the ear (usually resulting in written complaints sent to the air force). Consequently, a similar thing should exist for charged particles that are faster than light – a luminal boom, if you will. This is not impossible: Although nothing can be faster than the speed of light in vacuum, some matter decelerates light quite a lot (for example water). If a very fast, charged particle moves through such a medium and gets faster than lightspeed, it will result in brilliant, very intense radiation. This radiation does not have a single wavelength – nonetheless, the intensity of the light gets stronger with higher frequencies, which is why Cherenkov radiation

is classically perceived as blue light. This phenomenon is the reason why nuclear reactors typically glow blue. Another, quite unexpected appearance of Cherenkov radiation is the condition called astronaut's eye: If you are on a spacewalk and your eyes are hit by stray cosmic radiation, an instance of Cherenkov radiation my occur within your eye, resulting in your vision being disturbed by bright flashes. That surely cannot be healthy.

Rainbow Gravity

As Einstein has taught us very intuitively using elevators, the trajectory of light is affected by gravity as everything else is too: If light flies past very heavy objects, it will start to bend around said object instead of continuing in a (seemingly) straight path. A thing that cannot be understood with Einstein's elevator analogy however is the fact that the strength of bending is a function of the wavelength. Generally, there is no consensus whether gravity actually has the capability of acting similar to a prism (however, the science people are working on figuring it out) – but if it were the case, heavy objects like black holes or galaxies could have colourful halos along their horizon. Additionally, if proven correct, gravitational rainbows would largely discredit the big bang theory, as this theory is mostly based on measuring the frequency of incoming cosmic radiation. Since the current big bang theory does not take into account the possibility of gravitational frequency shifts, the theory would have to be revised.

The Bottom

Congratulations! You have made it to the end of the article. While it got longer than I first anticipated, I hope that you have learned at least some things along the way. Colour and light are a fascinating subject, and much remains to be discovered (although most things can probably be boiled down to electrons being excited). In this sense, all the best and enjoy all the physics out there working hard to provide you with a colourful life. Cheers!

Bunt

Hello this is about colours

von **Anna Huber**

I don‘t want to live in the grey-zone all the time.
Unleash the torrent of colour
overwhelm me.

Lush shades of red
satin blue shimmering
green makes my heart coil
set me free.

I’m tired of living in the grey-zone
All I see is dull and lifeless
The heavy clouds burden me
How long until the rain breaks out and streams down my face?

I long for the vibrancy of summer
make my heart rejoice
warm my soul

I don’t think I think I’m thinking

The shades of grey comfort me
they resonate with my soul
don’t disturb me
leave me be

I don’t want to be happy and optimistic and false
I am real whether you like it or not
I am real and ugly and you don’t have permission to know me

follow me down into my ocean of turmoil
I have built a refuge
it is cosy down here
the waves are strong and turbulent and keep me sane (?)

You wouldn't survive without colour
You need to rejoice
You need to feel the happiness and love and warmth

Bring out the flowers
Bring out the paintings and wallpaper and fashion
Force the happiness down your throat until you gag
it looks hideously garish to me

Cherish the sentiment
don't try and follow me
you will drown
I am built from broken glass

My shards reflect rainbows to those who look
but they will cut you if you try to possess them
stay in the light
be the light

Overrated, Underrated or Properly Rated Colors

by Khye Wen-Ho

No context. It's just practically a list of colors (I found on Google) that are overrated, underrated or properly rated.

Overrated

- Black #000000: This "color" is literally nothing or it could be any color with no brightness. It's basically a color without any bright ideas.
- Gold #FFD700: As a color, gold is just a darker version of yellow. The only thing cool about it, I guess, is its name.
- Primary colors (red, green & blue) #FF0000, #00FF00, #0000FF: The most common colors of course. Everyone thinks too highly of them and they are just everywhere.

Underrated

- Secondary colors (yellow, cyan & magenta) #FFFF00, #00FFFF, #FF00FF: Everyone talks about the primary colors, but no one even thinks about the secondary colors even though they are pretty important too.
- Jet #343434: Just the name alone is cool and, in comparison to black, it has more character.
- Goose turd green #4EA809: Need I say more?

Properly Rated

- White #FFFFFF: The opposite of black. It is all the colors at once. (We don't talk about subtractive color mixing *cough*)
- Orange #FFA500: After all it is a healthy fruit and a color. But what came first, orange or orange?
- Thanos purple #6E376E: This purple is perfectly balanced, as all things should be.

Insight into an insightful InSight

by **Aline Maillard**

If you have no idea what an “InSight” is, you should really read your e-mails. The InSight is an event organized by the D-MATL that invites material science alumni to talk about their paths after studying. This year, the InSight took place on the 4th of April and was well attended by students throughout all years of Bachelor’s and Master’s. Sara Morgenthaler, who is largely responsible for organising the event to begin with, started off by giving us some very interesting statistics about the career paths of materials alumni. She collected data via LinkedIn regarding what happened to students after they finished their master’s degree. Interestingly, out of the almost 200 students Sara Morgenthaler could track down, 39% chose to do a PhD and 38% of alumni went into industry. The other 23% are doing internships, unknown things or something completely different. And the speakers for the InSight event reflected that.

Jonas Bosshard started by explaining how he consciously decided against a PhD; he liked working on different projects way too much as that he could have imagined working on one for 4 years. After he finished his master’s thesis, he stayed in the group and continued to work on his project, but now as an employee for the start-up Spectroplast. While he liked the start-up atmosphere, Spectroplast felt a little bit too small with 3 employees in total, and so he looked further and found his new employer in 9T labs; a start-up that had 14 employees at that time. Now, 3.5 years later and after a steep growth of the company, Jonas is head of engineering and materials at 9T labs. He proceeded by telling us about 9T labs, an additive manufacturing company that can print high performance carbon fibre composites, and how a normal work week looks for him.

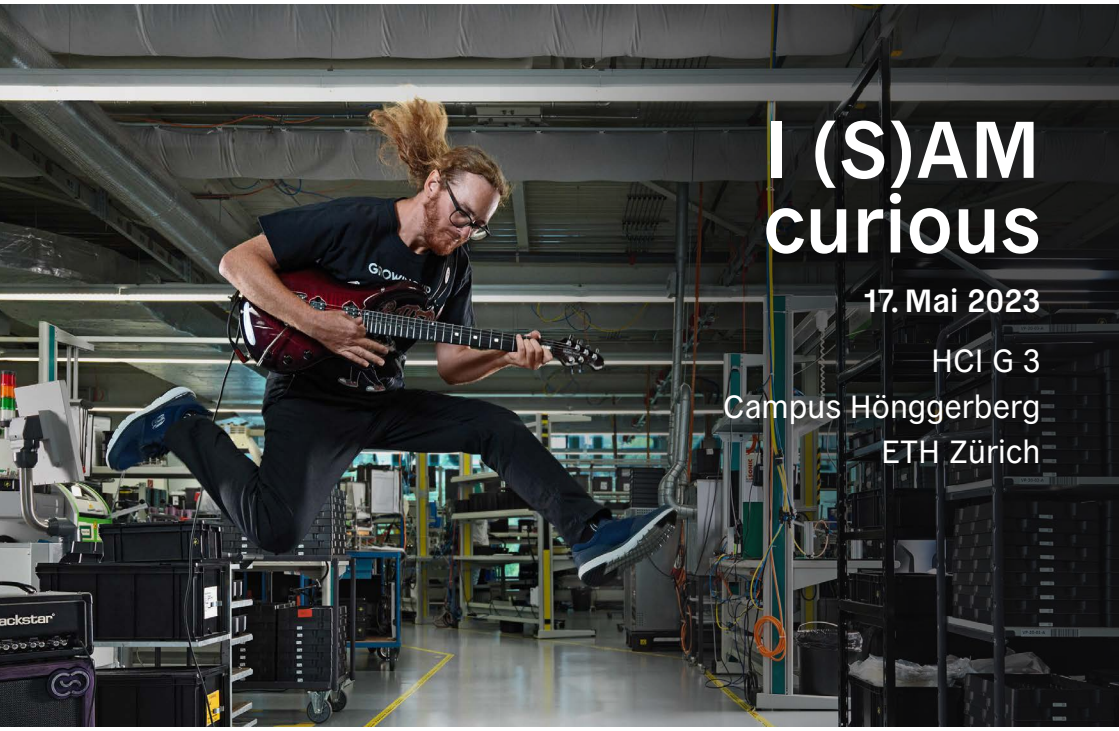
The next talk was by Nicole Aegerter. She told us how she slithered from doing a master's project at D-MAVT into doing her master's thesis and then a PhD there to finally end up co-founding the start-up Antefil Composite Tech. They developed a coating process to obtain micro-engineered fibre composites for optimal consolidation. Nicole told us about her work week and that they are currently working on scaling up their production. She mentioned that she had never really planned on doing a PhD, but it all just fell into place and she would do it all over again. She stressed that we should have the courage to decide.

The final talk was by Fabian Geiger. He also decided against a PhD, for similar reasons as Jonas, and dove straight into industry. He had the most diverse career path of the 3 guests. Due to his household frequently moving, he often ended up changing employers. Fabian started off in Alstom Power, switched to RUAG Space (now: beyond gravity), then was a full-time father for a while, and now works part time as laboratory manager in metallography at Hilti. He showed that career path changes are possible and nothing to be intimidated by.

After the presentations, we all moved out of the HCI J3 into the hallway and enjoyed a wonderful apéro. We had time to talk to Jonas, Nicole and Fabian some more or we could simply enjoy some drinks and snacks in good company.

Thanks to everyone involved for organizing a great InSight and thank you to Bettina Kurth for providing images of the event.

Pictures: Bettina Kurth



I (S)AM curious

17. Mai 2023

HCI G 3
Campus Hönggerberg
ETH Zürich

Vorstellung Forschungsbereiche im D-MATL / Presenting research at D-MATL

Programm / Programme

15:30 Türöffnung / Opening

16:00 Begrüssung / Reception

16:05 Präsentationen Forschungsgruppen à 3-4 min / Presentations of research groups 3-4 min each

17:20 Präsentation Sensirion / Presentation Sensirion

17:40 Schlusswort / Closing word

17:45 Networkingapéro / Networking aperitif

Hier anmelden. / Register here.

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SENSIRION

Being spoilt for choice - and why it won't get better when you read this

by **Muriel Haug**

We are privileged. We can choose what we want to become. The first step towards an independent future you have already done is by studying in a field for which specialists are highly sought after and at one of the best universities in the world. Big words, I know. I feel intimidated by such phrases. If you started that well, your next career step must be at least as good as this first move, mustn't it? When the end of studies approaches, most have to decide: industry or academy? To industry, you can go anytime. To the academy is not so easy (or not at all). So, it seems to be a tough choice to make. This is why I recommend taking your time to think about both options. Mainly because you have to consider also one level deeper into both: if industry, which and which company? If academy, which field and which group?

This is precisely the situation I faced almost two years ago, working on my master's thesis, struggling with taking this decision, and being overwhelmed with the wide variety of career paths that all seemed similar but were still so different. Finally, after many interviews with people with and without Ph.D., freshly introduced to the workforce, and senior leaders from various industries, I concluded that I want to do a doctorate next.

After this first decision, the next challenge emerged: where and in which group? My top requirements for a group are a social environment and a human as a supervisor. However, since I was fed up with experiences in extended stays in foreign countries at that time, coding was not my show-case discipline (although I love it!), I cannot speak nor understand Italian, and the groups at D-MATL, which were then left, did not have an open position; I felt there was no attractive option left for me. Especially as there was still the burden of being a good choice for my next career step.

But there was still hope. During my interview marathon, I spoke to three people who studied materials science and then switched to another department. Before, it never crossed my mind to change to another department since I was always happy with the materials science community at ETH. With the dissatisfaction of not seeing a viable option for me to conduct a doctorate at the D-MATL, I asked and looked around in other departments. I was lucky and found a perfect match: the Optical Materials and Engineering Laboratory, short OMEL, with David Norris as its professor at the mechanical department D-MAVT. It is a lab working at the cross-section of mechanical engineering with lots of quantum mechanics, chemistry with synthesizing nanoparticles, and materials science with characterizing their optical behavior and combining the two previous disciplines. As I did a project on inverse opals in the US, I was intrigued by the research opportunities I have at this lab. I could not have found a better group, as all crucial factors are fulfilled: an interesting project, a good supervisor, and (in my view, the best motivation) a cool group with nice, social, and smart people. *

With that short story, I want to tell you that there is more than academy, more than just the group you did your projects with, more than D-MATL, more than ETH. So, take the time to look around, broaden your horizon. Perhaps your perfect match is just a 12 min LINK-ride away.

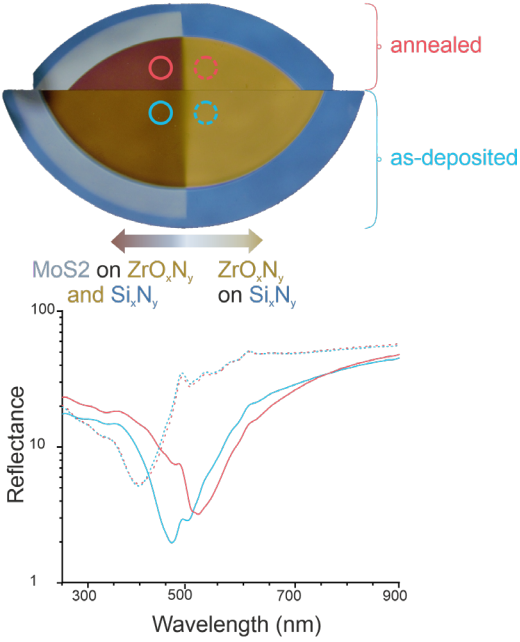
And if you feel that it was not the right choice for you after the first months, no problem, you learned something and know better what you are looking for now. It is a decision for your next job, not your whole identity and life. Look beyond and prioritize according to your needs, not your image.

*If you are currently looking around: it is said that at least two of these three factors have to meet your expectations, else leave the fingers off that offer, you won't be happy with it afterwards.

Thermochromic Sensors with 2D Materials

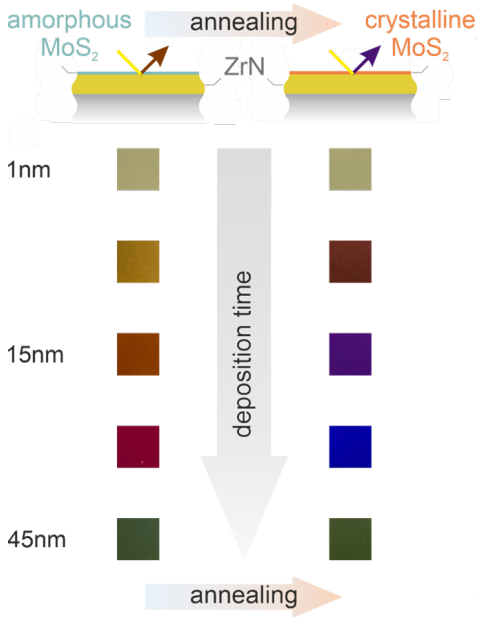
by José Ocaña

Color is an intrinsic part of our perception of the world, and it originates in many different physical mechanisms. Out of all of those, interference is a mechanism that allows us to tailor color by changing the thickness of a thin film coating. When there are two (or more!) materials with different optical properties (refractive index), for every given combination of thicknesses, there will be some wavelengths that get absorbed due to destructive interference, giving the material stack a color. Although this mechanism has been used for centuries, it still faces some challenges. For instance, getting green is challenging since it requires suppressing both low and high wavelengths. Engineers would also prefer to use less interference-causing material, but the question of how thin these thin films have to be still needs to be answered. Here, I'd like to describe how, during my research at the Laboratory of Nanometallurgy, we attempted to push the boundaries of this mechanism by designing color-changing material stacks for sensing applications and obtaining every color with a minimum thickness.



To open the door to more color design flexibility, we looked at 2D materials – materials so thin that quantum confinement exists in one direction. In some of them, like MoS2, this confinement leads to changing optical properties with thickness, giving creative flexibility in the colors that could theoretically be obtained.

However, 2D materials have rarely been used in thin film technologies since the traditional techniques for obtaining them lead to non-uniform coverage and poor control over their thickness. Among the alternative ways of producing MoS2, there is magnetron sputtering, a synthesis technique that we had previously used in the lab to produce color coatings. But it was still not clear if this method could lead to ultrathin, high-quality MoS2. Upon careful trial, we managed to produce a thickness down to 1 nm, but the MoS2 that came out was amorphous. Little was known about amorphous MoS2 optical properties and whether they also changed with thickness due to quantum confinement. Rather than giving up, we asked ourselves, “Could we take advantage of that?” After all, if we could crystallize the MoS2 in a second step, making MoS2 a phase-changing material, then we could synthesize color-changing 2D temperature sensors!



We successfully identified the temperature at which MoS2 crystallizes and therefore changes its refractive index. However, in order to produce colors through interference this way, we still needed a metal reflector underneath. By placing a metal underneath, even changes in the optical properties of only 1% can result in a change of color! Unfortunately, traditional metals used in optics (silver, gold, and aluminum) degrade when annealed with MoS2. Luckily, we identified a metallic material that is inert to MoS2 at the temperatures needed for its crystallization: ZrN. The ZrN-MoS2 combination can be synthesized in less than an hour through a technique compatible with industrial applications, and the ability to control its thickness (and therefore the optical properties of MoS2), combined with the phase-changing behavior of MoS2, allows us to design virtually any color.

Excursion to Sensirion AG in Stäfa

by **Michael Imhof**

Introduction to Sensirion

Unless this is the first time you're reading the materialist, you're probably already familiar with Sensirion, one of our faithful sponsors. For those of us whose interest had been aroused by these ads (or some other kind of advertising), SMW had organised an excursion to Sensirion on the 19th of April, so we could learn what Sensirion actually does. – As it turns out, climbing or parkouring over their buildings isn't really part of their daily business. Who would have thought!

To get to Sensirion, we took the train to Uerikon and made our ascent up the infamous stairs that I still know all too well from my internship at Avantama (don't worry, there are alternative ways, if "hiking" to work isn't for you). After our arrival at building A, we were first introduced to Sensirion by Aaron Locher (yes, our HoPo Aaron), Sensirion's "Student Ambassador". He told us how Sensirion was founded in 1998 as an ETH-spinoff and has been rapidly growing since then, having expanded the site in Stäfa to three buildings and establishing international sites in several countries. However, while there is also some production in Hungary and China, 85% of Sensirion's production is still being done in Stäfa. Their product range consists of sensors to detect humidity, temperature, gases, gas or liquid flow, etc., both as cheap single-purpose sensors or as more expensive modules with more functionality. They are used in cars, industrial processes, health technology, household appliances, consumer electronics and more.

Part of their success, Aaron is convinced, is their flat hierarchy that values honest and open communication, fairness, and teamwork, all with the goal to achieve the best performance. The fact that they invest 25% of their revenue in R&D is certainly also a deciding factor in them having so many different (and successful) products.

Daily Business at Sensirion

The next presentation was held by former SMW-president Marco Gysel, further giving me the impression that the whole thing was kind of an SMW inside job. After his bachelor in materials science and a master in micro- and nanosystems, Marco came to work for Sensirion. Based on his experience, he explained how there are three main divisions within Sensirion that may be interesting for us to work in: R&D, operations, and sales. In his first job, he was Product Manager, where he was responsible for one product which he had to guide on its way through all three divisions. This allowed him to see a lot of different aspects of the company. After a while, he chose to apply for a new job internally and became Business Developer, which had him focus on the sales of several products. However, this still requires tight cooperation with the other divisions, as he still needs to know the technical details of "his" products and may have to react to any technical feedback he gets from his customers.

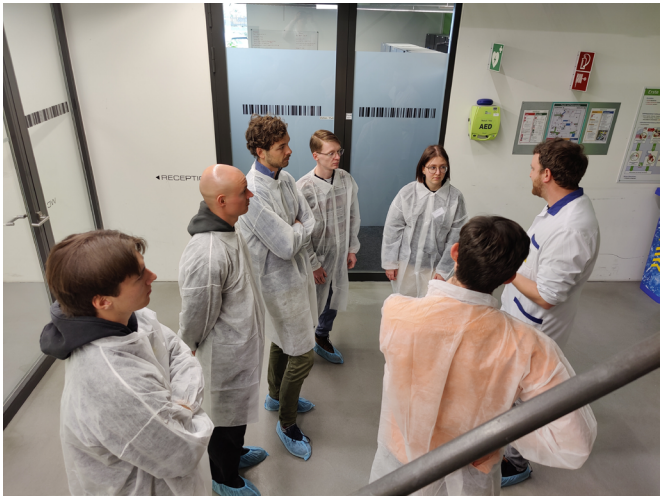
Marco can name many reasons why one would want to work at Sensirion: For one, their products can actually help make the world a better place, allowing the proper function of medical respirators or limiting emissions of greenhouse gases like methane by being able to detect leaks in real time. On the more personal side, Sensirion also hosts a lot of social events, such as the weekly "Friday beer", an annual getaway and more. And while some people might like a tight schedule, he also appreciates that he can decide by himself on his work time, so he can for example take a long lunch break to do some sports in between. He also appreciates the "healthy" work environment and, again, the flat hierarchy, which means that workload is not too high, new employees get responsibility from the start and their feedback will be taken seriously.

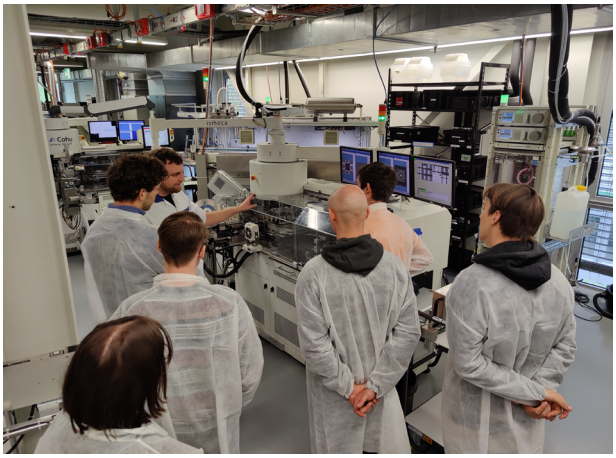
Of course, working in sales may not be for everybody, even though Marco seemed quite convinced that there's still plenty of engineering work involved. If you don't think so, then the line of work of Edgar Smit might be more to your

liking: After studying materials science at EPFL, he became Junior Process Engineer. The job of Process Engineers is to implement the “crazy ideas» of the people from R&D into automated production. In his responsibility for wire-bonding, this means making a lot of mechanical tests on wire-bonds to test their viability, studying alternatives like different types of wires, but also to teach the machine operators working in shifts how to use the machines and how to react to any errors. As such, he considers that his studies prepared him fairly well for this job.

Factory Tour

After a short break and a walk past Sonova to Sensirion’s building C, our group was split into three and given a tour of the production facilities by three more Process Engineers. First, we needed to put on special coats and overshoes, both to prevent us from tracking dirt into the factory and to prevent any electrostatic discharges that may damage the sensors. On top of that, the factory also includes different levels of cleanrooms requiring even more protective equipment, including a few rooms for lithography. Depending on one’s position, more or less work would be done in those cleanrooms, so if you never got comfortable with wearing masks during Covid, you may want to choose your job within Sensirion accordingly. Our guide, Lukas, showed us many of the production machines, such as wafer saws, wire-bonding machines, testing machines, encapsulation machines, packaging machines, etc.





While some of them are just bought off commercial suppliers, many are specifically designed for their tasks by Sensirion's own engineers. When asked about optimisation, Lukas told us that optimising the production of established products isn't really a priority and they would rather focus on developing new products, as efficiency gains are usually small. What I found unexpected is that, while demand for smaller sensors used to be the driver for minimisation for a long time, most customers are now actually happy with the sensors' size, so Sensirion's main drive to minimise further is now to fit more sensors onto one silicon wafer, which is one of the main factors deciding the cost of the product.

After our return from the tour, we were offered a small apéro and were free to ask questions. Aline and I were joined by Desirée from HR and got to chat with her for a bit. From her, we learned for example that most positions can be done either full-time or down to 80% part-time without any problems. What I found most interesting was the option of "flexible" part-time, where you usually still work five days a week, but can take more holidays.

After the apéro, we all headed back to Uerikon and on the train back to Zürich. With this, I would like to thank Tamino and Aaron for organising this excursion, and thank you as well to everyone at Sensirion for your warm welcome and the informative afternoon!

Pictures: Aaron Locher

Industriepraktikum bei Plansee SE in Reutte in Tirol

von **Evamaria Fuchs**

Wie in der letzten Ausgabe versprochen, erzähle ich euch hier von der zweiten Hälfte meines Industriepraktikums. Man kann es schon dem Titel entnehmen – die Firma habe ich nicht gewechselt, sondern von Januar bis März für drei Monate im Hauptsitz der Plansee Group in Österreich gearbeitet.
Reutte ist etwa gleich urban wie Seon, ein kleines Städtchen in den Bergen an der Grenze zu Deutschland. Die Umgebung ist aber sehr schön, Schloss Neuschwanstein ist zum Beispiel ganz in der Nähe und man kann wunderschöne Wanderungen machen. Das Plansee-Werk hingegen ist ein ziemlicher Gegensatz zur umliegenden Natur und den romantischen Burgen. Etwa 1500 Menschen arbeiten auf dem Gelände. Aufgebaut ist es ähnlich wie in Seon, auch hier wird vor allem Pulvermetallurgie betrieben, neben Wolfram auch mit Tantal und vor allem Molybdän. Es sind fast die gleichen Arbeitsschritte, aber wofür es in Seon vielleicht ein, zwei Maschinen gab, wurden hier gleich ganze Fabrikhallen gebaut.
Ich war ganz hinten im Werk im Reinraum zuhause. Dort werden von Plansee hergestellte Bauteile für einen Kunden, der Lithografie-Maschinen zur Herstellung von Computerchips baut, gereinigt und assembliert. Von da aus braucht man gut 15 Minuten zu Fuss, um zum Eingang und der Kantine zu kommen. Zum Glück gibt es werksinterne Firmenautos, mit denen man sich mit einer erlaubten Höchstgeschwindigkeit von 15 km/h etwas schneller von Halle zu Halle bewegen kann. Meine Aufgabe war es, Validierungsexperimente auf einer ICP-MS durchzuführen und mit den Resultaten statistisch zu belegen, dass deren Messwerte den verlangten Genauigkeitsanforderungen entsprechen. Wie auch schon für mein vorheriges Praktikum war der Statistikkurs also schlussendlich komplett unerwartet die Vorlesung, die mir in der Arbeitswelt am meisten geholfen hat.
Ich musste mich zuerst daran gewöhnen, dass die Uhren in Österreich etwas langsamer ticken als in der Schweiz, aber ich habe die entspanntere Arbeitskultur und die Wochenarbeitszeit von 38.5 Stunden durchaus zu schätzen gelernt. Und ich konnte sogar Schweizerdeutsch sprechen. Wir haben uns zwar nicht immer gleich verstanden, aber waren uns einig, dass

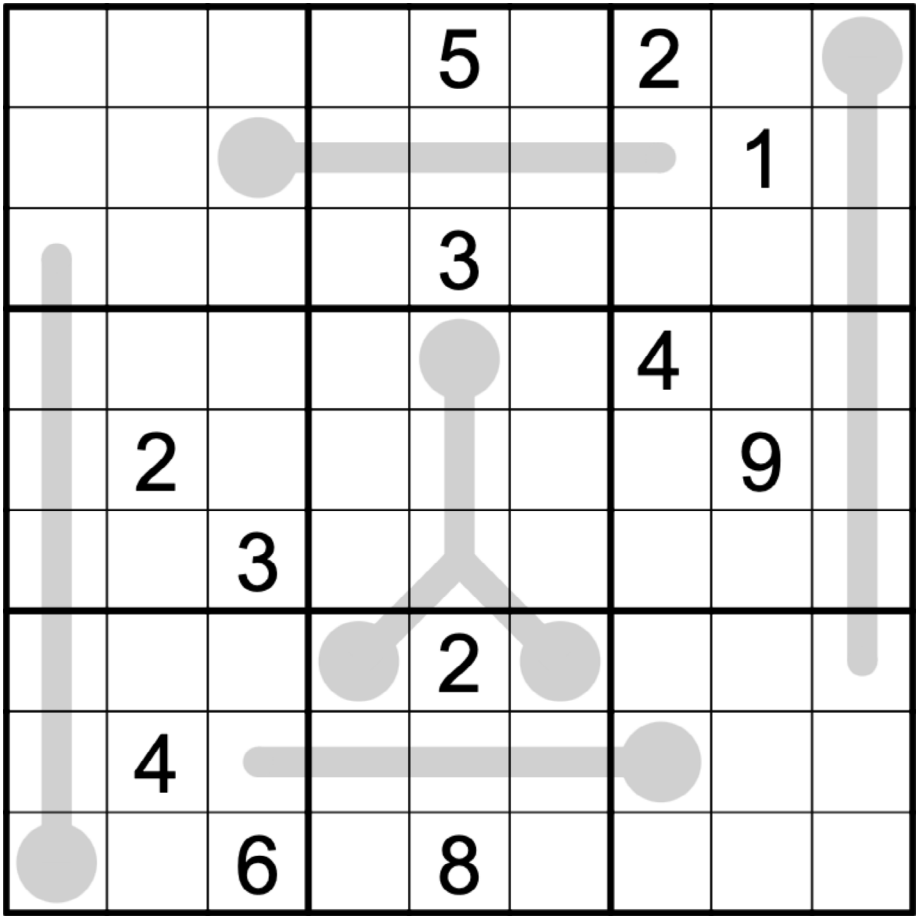
man sich Hochdeutsch einfach nicht antun kann. Sie fanden meinen Dialekt süss («Des isch ja lieb, sogs no mal») und ich ihren, beide Seiten waren also bestens unterhalten.
Es ist zwar in jedem Tal anders und wahrscheinlich vermische ich alles, aber weil es so schön war, hier ein paar Beispiele:
Ja mei isch des zach – Das ist ja mühsam/krass
I kimm eini/aussi/aui/aai – Ich komme rein/raus/hoch/runter
Oane tschiggen gehen – Eine rauchen gehen
Des geht sich it aus – Das reicht nicht
I hob Kieh dahom, i konn it weg – Ich habe Kühe zuhause, ich kann nicht weg
ICP-MS steht für Inductively Coupled Plasma Mass Spectroscopy. Es ist also ein Spektrometer mit einem Ionendetektor, bei dem die Probe in einem durch Induktion erhitzen Plasma ionisiert wird. Bei uns war es ein Argon-Plasma. Zwischen Plasma und Detektor gibt es noch verschiedene Linsen und eine Kammer mit Reaktions- oder Kollisionsgas, wo Störungen, z.B. doppelt geladene und doppelt so schwere Elemente oder Verbindungen mit gleicher Masse und Ladung wie die zu messenden Ionen, herausgefiltert werden. Vor und nach dieser Zelle ist je ein Quadrupol-Filter installiert, der nur die Ionen mit dem erwünschten Masse-zu-Ladungs-Verhältnis durchlässt.
In der Firma stehen zwar schon zwei Geräte der gleichen Art, aber da mit «meiner» Maschine Proben in wässriger Matrix mit Verunreinigungskonzentrationen im ng/L-Bereich gemessen werden sollten, und nicht wie bei den anderen Verunreinigungen in mit verschiedenen Säuren aufgelösten Bauteilen, also einer Metallmatrix, musste der Validierungsplan ziemlich stark abgeändert werden. Sie haben mir da freie Hand gelassen, also musste ich mich in den ersten Wochen in Formeln vergraben.
Das war auch gut so, denn bei meiner Ankunft war die Maschine erst mal kaputt. Aus dieser Situation habe ich gelernt, dass auch die teuersten Serviceverträge nichts bringen, wenn die Herstellerfirma nicht genügend Technikerinnen und Techniker anstellt. Nach zwei Wochen Kaffeepause durfte ich dann bis ans Ende des ersten Monats im firmeneigenen Analytiklabor arbeiten, wo die anderen beiden ICP-MSs stehen. Leider lief da auch gerade so wenig wie schon seit langem nicht mehr, aber es gab dafür zum Kaffee meistens noch Kuchen dazu. Ich habe trotzdem einen guten Einblick in den Arbeitsalltag erhalten, ich durfte beim Proben Einwiegen, Auflösen und Messen helfen und habe gelernt, wie man die ICP-MS bedient und kalibriert. Da

die im Werk verarbeiteten Metalle resistent gegen die meisten Chemikalien sind, wird zum Lösen der Bauteile grösstenteils Flusssäure verwendet. Ich war sehr froh, als ich wieder zurück in den Reinraum zu meinen Wasserproben durfte.
Nach einer weiteren Woche mit vielen Pausen hat es schliesslich ein Servicetechniker zu uns geschafft. Ich konnte also endlich anfangen mit meinen Experimenten. Bis ich mich an die Sauberkeitsanforderungen im Reinraum gewöhnt hatte, ging es eine gewisse Zeit. Da die Maschine im ng/L-Bereich kalibriert wird, reichte es teilweise trotz doppelter Handschuhe aus, den Arm kurz über die offenen Proberöhrchen zu bewegen, um die Messwerte für Natrium, Calcium und Eisen unbrauchbar zu machen. Genau pipettieren kann ich jetzt. Auch sonst hat nicht alles gleich so funktioniert, wie es hätte sollen. Wir hatten zum Beispiel plötzlich kein Ammoniak mehr und niemand konnte sich erklären, wo der Inhalt der Flasche hingekommen war. Und der Kühler für das Plasma wollte plötzlich nicht mehr kühlen, also haben wir den Ersatzkühler aus der Analytik geklaut und den selber eingebaut, statt nochmal auf den Techniker zu warten. Meine ersten brauchbaren Messwerte hatte ich Anfang März. Von da an gab es signifikant weniger Kaffeepausen für mich, und ich habe es tatsächlich noch geschafft, die Validierung abzuschliessen.

Sudoku in Peace

by **Jonas Weber**

Normal sudoku rules apply. To celebrate the rising temperatures and the blooming flowers, the sudoku grid has additional gray lines with circles at one end. They are thermometers. The digits in a thermometer strictly increase starting from the bulb end.



Magic Eye

by Aline Maillard

Can you find out what's the hidden message in this picture?
If you have no idea what this is, you might want to google "magic eye".

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GESS Kolumne

Schwedisch I/II

von **Michael Imhof**

Seit dem Beginn meines Studiums hatte ich mir vorgenommen, einen Teil meiner GESS-Credits mit einem Sprachkurs zu machen, und nach zahlreichen Verzögerungen durch volle Stundenpläne und verpasste Anmeldefristen gelang mir dies letztes Jahr endlich. Nachdem ich einige verschiedene Optionen angesehen hatte, entschied ich mich schliesslich für Schwedisch, was sich als Glückstreffer erweisen sollte. Der Kurs Schwedisch I A1 findet sowohl im Herbst- als auch im Frühlingssemester jeweils am Montag oder am Mittwoch statt, und die Fortsetzung Schwedisch II A2.1 – sollte einem der erste Teil gefallen haben – im Frühlingssemester am Montag.

Der Unterricht ist interessant und abwechslungsreich, mit Grammatik-Lektionen, Wortschatzübungen, Gruppenarbeiten, Hörverständnissen und dem gelegentlichen Kahoot. Die Kursleiterin Franziska Kreis (oder «Fränzi», wie wir sie nennen dürfen) ist engagiert und kompetent und schafft es, uns ihre Faszination für die Sprache gut zu vermitteln. Etwas, das mich zu Beginn etwas überrascht hat, ist ihr besonderer Fokus auf Betonung und Satzmelodie. Etwas, was zweifellos wichtig für das gute Sprechen jeder Sprache ist, aber das ich in der Schule im Englisch- und Französischunterricht nie explizit mit auf den Weg bekommen habe, sondern bis dato nur unbewusst durch das Imitieren von Muttersprachlern gelernt habe.

Wie man mich bereits vorgewarnt hatte, ist ein Sprachkurs aber auch eine ziemliche Investition an Zeit (und etwas Geld, mit 80 Fr. Kursgebühr plus knapp 100 Fr. für das Lehr- und Übungsbuch): Pro Woche kommen ca. 2 h Hausaufgaben dazu, und zwei Wortschatzprüfungen, eine Sprechübung und eine Schreibübung während des Semesters sind gute Motivation, dass man regelmässig repetiert und die Vokabeln lernt. Wenn man dies immer brav macht, ist dann aber dafür die Semesterendprüfung nicht allzu schwer.

Falls ich euch nun Lust auf diesen Kurs gemacht habe, dann wünsche ich euch schon mal viel Spass dabei, und *Lycka till!*

ASVZ Kolumne

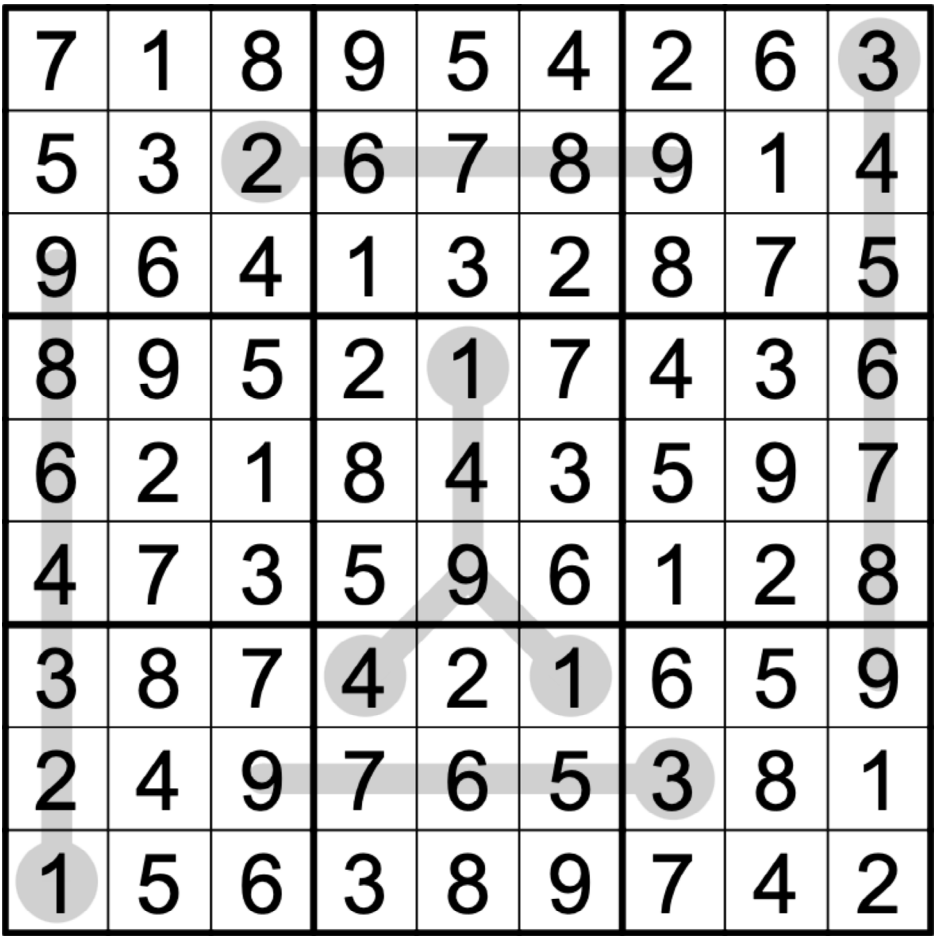
Kraftberatung

von **Aline Maillard**

Hast du dich schon mal gefragt, was dieser ominöse «Kraftberatung»-Eintrag im ASVZ-Fahrplan bedeutet? Und was zum Kuckuck das denn ist, mit nur jeweils 2 Plätzen?
Kurz erklärt, jemand vom ASVZ zeigt dir diverse Trainings-Geräte im Fitness Raum. Ihr geht von Posten zu Posten und testet aus, welche Sitz- und Gewichtseinstellungen wohl am besten für euch passen und wie ein Training so ablaufen könnte. Und als wäre das nicht schon nützlich genug, könnt ihr euch dort auch gleich in der ASVZ-App «kGym» Notizen zu den einzelnen Einstellungen und Übungen machen.
Ich weiss jetzt nicht, ob die Kraftberatung immer so ablaufen wird, weil ich war als totaler Newbie dort; ich habe gerade so knapp den Eingang zum Fitness-Studio gefunden. Ich nehme jedoch an, dass wenn man tatsächlich schon mal Fuss in ein Fitness-Studio gesetzt hat, dass die «Kraftberatung» auch wirklich mehr in Richtung Beratung geht und weniger als sprechende Anleitung dient.
Ich fands äusserst praktisch und man kommt sich auch nicht «vorgeführt» vor, da eh alle anderen mit Kopfhörern am Löcher ins Luftleere Starren beschäftigt sind.

Des Rätsels Lösung

Solution of the magic eye:
SMW



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