

Hypot-enthuse_ Lia Li on optical tweezers and entrepreneursh...

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SPEAKERS

Lia Li, Maymana Arefin, Malcolm Chalmers

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fun to just read about lots of different things. But I think that's kind of what's really helped in that. I don't see my tie. As a singular thing, I see my time as, where am I going to get energy from and learning something or making something,

Maymana Arefin

obviously, I worked in industry for two years, and I did a lot of photonics stuff, I started

whatever cubic feet, it just means it's like, super clean. And so what's really nice about chip fabrication, which is not quite there fowou

Lia Li 15:01

Yeah, straight up. Okay, so yeah, so this is something whic

Maymana Arefin 18:51

I really like that I feel like you've explained really well. So the kind of idea that you're trying to get rid of a lot of the sort of jargon that often excludes people. And I wonder where that comes from? Do you feel like that's a very personal thing for you that you thought that was important to make sure that the business that you set up was more accessible? Because I can really hear what you're saying about that frustration?

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I found fascinating was a reminder, she was just so knowledgeable, and her expertise in words, how words have impact, when you're talking about science is relatively easy. In terms of words, when you're talking about social science, we're talking about inequality, you're talking about fairness, the importance of choosing every word. And I've honestly, that was just a really eye opening moment for me. And so throughout last year, we just had all these conversations. And it's really led me to kind of think about how the branding of the company should be

Malcolm Chalmers 22:58

I there's there's a lot of things that you've raised there with regards to issues around racial equality and gender equality and things which I definitely want to cover more. But while we're on the subject of the actual the science behind what you do, there was one term that I saw cropping up in some of your work, which I found fascinating. Just, you know, when you see words out of their usual context, and you know what those words mean, but not specifically, I think I know which one you're going for. Yeah. Let's, let's see, there was a lot of talk of your work being based on whispering gallery mode resonances. Yeah. Now I think I know what a whispering gallery is. I don't know what are whispering gallery ~~of the full the 5% of the things you think you could try and explain to a very lay person audience?~~

Lia Li 23:46

Of course, because yeah, so whispering gallery modes, you may have heard of the whispering gallery experiment where you can hear a voice from the other side of the

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Malcolm Chalmers 33:18

There was also something I found out, which I found fascinating. But unfortunately, you are only the second person on this podcast that this fact applies to, which is that you were one of two people who were Miss January in the science girl calendar was put out a few years ago. This was we had an interview with Suze couldn't do a couple of weeks ago, where she mentioned this as soon as I noticed that I thought we have to mention this. This is now two of the science girl calendar girls we've had on this podcast.

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Lia Li 33:51

Take them all off. Oh god. Yeah. So science communication. Yeah. So when I was just before my PhD, actually, so when, and this actually not contributed, but it was like a bit of a boost in terms of Oh, yes, I made the right decision. So one thing about working in defense was that you can't talk about any of the work you're doing. And also, I mean, there's all sorts of other uncomfortable aspects of working in defense. But I'm someone who, you know, I'm sure it's come across now. I'm very curious, and I'm very open. And that does not work. Well, I don't think in a defense kind of industry. And one thing that I wanted to do was to improve my presentation skills. So, you know, back then this is like over over 10 years ago, I used to be really shy. I still am shy. I would consider myself quite introverted sometimes. And I hadn't had an opportunity in my undergraduate to really talk about science or talk about science and the way that I wanted to, I used to do Imperial College radio. But that was that was that was doing a kind of radio show of my friend where we talk music. And that was something I was very comfortable talking about, you know, it was, I was super comfortable talking like that. But just never found that level where I felt that I spoke with, I don't know, whether it's grace, or power or with kind of conviction, it was just something that I wasn't very confident in. So I decided to do that ignite talk, which is kind of like a mini TED talk, I guess. And that really helped define who I was, in terms of how I wanted the public to see me, which is very different to necessarily how you want academics to see you. And that really helped and I'm glad that it's still on the internet, I'm surprised it's on the internet. And it kind of an obviously, you know, especially then moving from Bristol to London to start my PhD and not knowing very many people, you know, two years have gotten since my undergrad. So nearly everyone I knew wasn't in London anymore. And, and it was nice to kind of feel like, Oh, I really enjoyed doing that ignite talk. And the science communication community is really friendly. So if things get really hard in the lab, and I don't have many friends, you know, in the first kind of year or so of your PhD, then then actually I can hang around these people see what they're doing and contribute learn was a lot of learning that I did that year, just listening to other people. And, and I really, really appreciated that time, because I think it's made me a better person, but also a better kind of scientist as well. I don't do it as much now because it takes a lot of work. I truly think that you know, science communication

obviously film it and also to photograph it so he can I'm over. And we basically did a lot of I was really interested in lasers and laser light showing texture. Because I because the way that I think about lasers is I always think about them as photons like these individual like pseudo kind of virtual particles, when actually the way that other people might think of lasers is like a beam of light or a ray of light. And and how cool would it be to just completely like, blow that up and just make lasers seem like they're organic, or that they look like flash or they look like smoke or something like that. So we just played around, and we did a bunch of photographs, where we're shining light into different forms of like, not clouds, but like smoke, like smoke rings, that kind of stuff. But then we also did some work where we shine lasers into liquid. And we put different fluorescent dyes and stuff in that liquid, so that you would get this extra dimension of intensity in the light. And then we made these like cool, they look like I forgot our Clint paintings, you know those paintings where it's like something's, like, almost not melty, but like a little bit like that. It's kind of like that, or I guess a bit of like Darley stuff where it's like, it's like the laser is melting in droplets or something. And that was super fun. And, you know, I wish I had more time to do stuff like that. But, you know, once again, it's like, there are people out there I think laser light shows have come a long way since and that was like eight years ago, probably. And there's so there's far more amazing stuff going on now, where people are using lasers to create really beautiful art you know, with music and stuff.

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Malcolm Chalmers 41:45

So cool. Looking through your your CV in your career to find things to talk about. You were given a making space award by the stem squad, he were a famed lab, UK 2012 finalist, you were head of the women in physics group at UCL for three years, you're now a member of the race quality steering group, you've worked a lot with Tiger in STEM, like, how have you found the extra 12 hours a day that you must need to get all of this stuff done? While the rest of us are stuck with the standard? 24? How have you managed to get 36 hours?

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Lia Li 42:16

So it was really funny, as I say that to people as well is there's a hierarchy By the way, because if you've ever met Dr. Jess Wade, you don't know what a Schedule C adjusted schedule I'm think I'm pretty sure she's she's flown for one day to do a talk and then come back. I can't remember exactly. But she is exceptionally busy. So, okay, maybe surround yourself with people that you're like, I'm inadequate. What I'm doing right now, to be quite honest with you. It's not good advice. Okay, so I mean, not to talk myself down, but so I don't really have, like, a huge amount of hobbies, like my time is quite kind of boring. I don't, I don't eat well exercise, that's probably another thing. I'm just gonna be on eskers. You know, I don't want people to think I'm also going to like a five kilometer run every

morning. That is not, I am not a morning person. I am not very good at kind of being responsible in terms of looking after myself. That probably gives me an extra amount of time, I think in that I'm just not thinking about normal stuff. Like when we're going to clean the dishes and stuff. I think the other part of it is I don't know how to explain it. But it's this all the stuff that I order stuff you listed. What's really funny is that I at the time that I decided to do those things, or that I want all I decided to do something extra. It never felt like I was adding another string to my bow. It actually felt more at times actually felt like I was taking time away from my research, if I'm going to be really honest. And some of that was other people commenting on how much I was doing other things, right. And that's, by the way, that's not a dig at any specific person. It's just a general feeling that anyone would feel in academia. If you know, I listed those things out, because none of those things are really positions of power, if I'm going to be honest that positions of of enabling better practices to happen. And so and I think that's why I do them, because there's a higher reason there's a bigger calling as to why that needs to happen. versus just filling all of that with like, I don't know, I don't know what else I would do to be fair, because I think the other part of it is, I'm really careful who I work with. So I wouldn't want to get roped into some science based organizations or committees or being an editor in a journal or that kind of stuff. But Cuz I cannot guarantee you that I'm going to surround myself with the people that are going to lift me up. Whereas all of the things that you mentioned that kind of around communities where I would feel uplifted, or I would learn something, or you know, that I would be a better manager or business owner, better mentor better something, rather than just being like, Oh, I got to control that, or something like that.

Maymana Arefin 45:30

I think that's really admirable, just to have the kind of discipline that you have. And also, I can hear that maybe it's been like a journey to get to the point now where you know, what sort of things you do want to take on? And the sorts of things maybe you can you can move to someone else?

Lia Li 45:46

Yeah, I think that comes like, you know, I hadn't had to describe it. But it's like, I've taken on things which I know, are viewed as detrimental to my scientific career, if that makes sense. And that kind of thing, what the only thing I can ever hope is that people see beyond kind of the metrics, because the other thing that I forgot to say is that I don't publish competitively. I know that about myself, compared to my peers, I have substantially lower publications, and I'm just gonna be the first one to say it so that no one else can say it to my face. I know, I don't have enough applications. That's fine. That was never my mission statement when I did my PhD wherever

it is I lose out in time to Publish to publish, but that's not what's important. So I don't mind it. Yeah.

Malcolm Chalmers 46:42

See, I think that's fair. I think that ties in a little bit, something you were saying earlier about? looking out for gendered language in the publications you were doing and not writing in the way that some people might have thought you should for a scientific career. I think that the traditional idea of what your science career would be, you write in this very traditional gendered way, you publish papers competitively, you don't spend your time with things like tiger and stem or race equality, because they're distracting you from the serious work. I wonder whether it's, I mean, I would hope that society is changing in such a way that we're moving into a world where those things actually end up being beneficial for a career. Because the focus has changed that way, I suppose Only time will tell us whether that actually turns out to be the case,

Lia Li 47:28

I really hope so I really, really do. Because there's people who do things that I do, and much more, you know, people who don't just kind of dip their toe in and kind of balance it with a scientific career, but people who end up dedicating their whole being into it. And and those people rightfully deserve equal, if not more compensation than a professor, that's my honest opinion. And yeah, I hope one day that that recognition is H't j po o thopi

are? And now?

Lia Li 49:16

Yeah, I think the the one thing I keep trying to tell myself, even to this day, is to trust your gut instincts. We are all born with an innate kind of feeling inside of us as to when things don't feel right. Or things might go into a worse situation. And I would say that 90% of the time, I haven't listened to my gut instinct. And that's not to blame myself, because there should never be any blame on that no one can predict the future and stuff like that. But in terms of I do have control as to believing myself more than next time it happens and I feel like I don't know whether it's related to being in lockdown, but because I've had so much time to kind of be in my own thoughts. I feel like I've started to really pay attention to that feeling. And I think we all feel it a little bit in terms of how we're all coping with, you know, do we go outside? Do I meet my friend kind of thing? We're all having that intense pressure of thinking to ourselves, does this feel right or wrong? And yeah, I think if more people had confidence in their own gut, that really helped. So the thing that's helped me is, as part of my company, I have someone who is the Executive Chairman. Sorry, I really don't remember all these names, because they're meaningless right now. And it's a team of two people. I mean, we do everything. And his name is Dr. Gordon Aspers. And Gordon's been fantastic. He's been working me for a whole year. We've never met. É. be. e. é