MATRIX

Successful Women in STEM

NORTHERN IRELAND SCIENCE INDUSTRY PANEL

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INTRODUCTION

Prof. Cathy Gormley-Heenan,
Chair of the MATRIX Women in STEM Study

In 2017 MATRIX commissioned a study on Women in STEM. We spoke to girls studying for their GCSEs and A-levels and they told us that their career guidance often didn't explain the opportunities that studying STEM subjects could offer them. They said that if they were good at science subjects, they tended to be pushed towards narrow, vocational STEM studies like medicine. In fact, the broader STEM subjects like engineering or computer science offer much wider career choices and flexibility.

We wanted to bring together some examples of women from Northern Ireland who have great careers in STEM. These interviews, which can be read at *www.matrixni.org*, tell you about their path through education, their careers and achievements, and why they love doing what they do.

You may not think STEM is for you, but when you read about how Dr. Rachel Gawley, who studied computer science, took an app she had developed to a stroke rehabilitation centre and saw her technology actually making a difference in people's lives, you can see how you can make a real impact.

You can also read about Dr. Liz Conlon, who climbed to the top of Mauna Kea, an actively flowing volcano in Hawaii, to collect light beams as part of her research. "I felt as though I could just reach out and touch the stars. It was a truly mesmerising experience," she says.

Or how about Rebecca Walsh, who presented at an innovation event in the New York Stock Exchange when she was only 24! Studying STEM develops your confidence and makes you better at communication and problem solving.

A career in a STEM subject offers you the opportunity to travel the world, build solutions to real world problems and work on exciting projects as part of a team. And of course STEM careers are well paid, with a wide range of professions to choose from. However your career develops, a degree in a broad STEM subject will give you the skills you need to be the best you can be in your job.

As these interviews show, whatever your interests and ambitions in life, studying STEM brings opportunities and experiences that are fulfilling, exciting and rewarding.

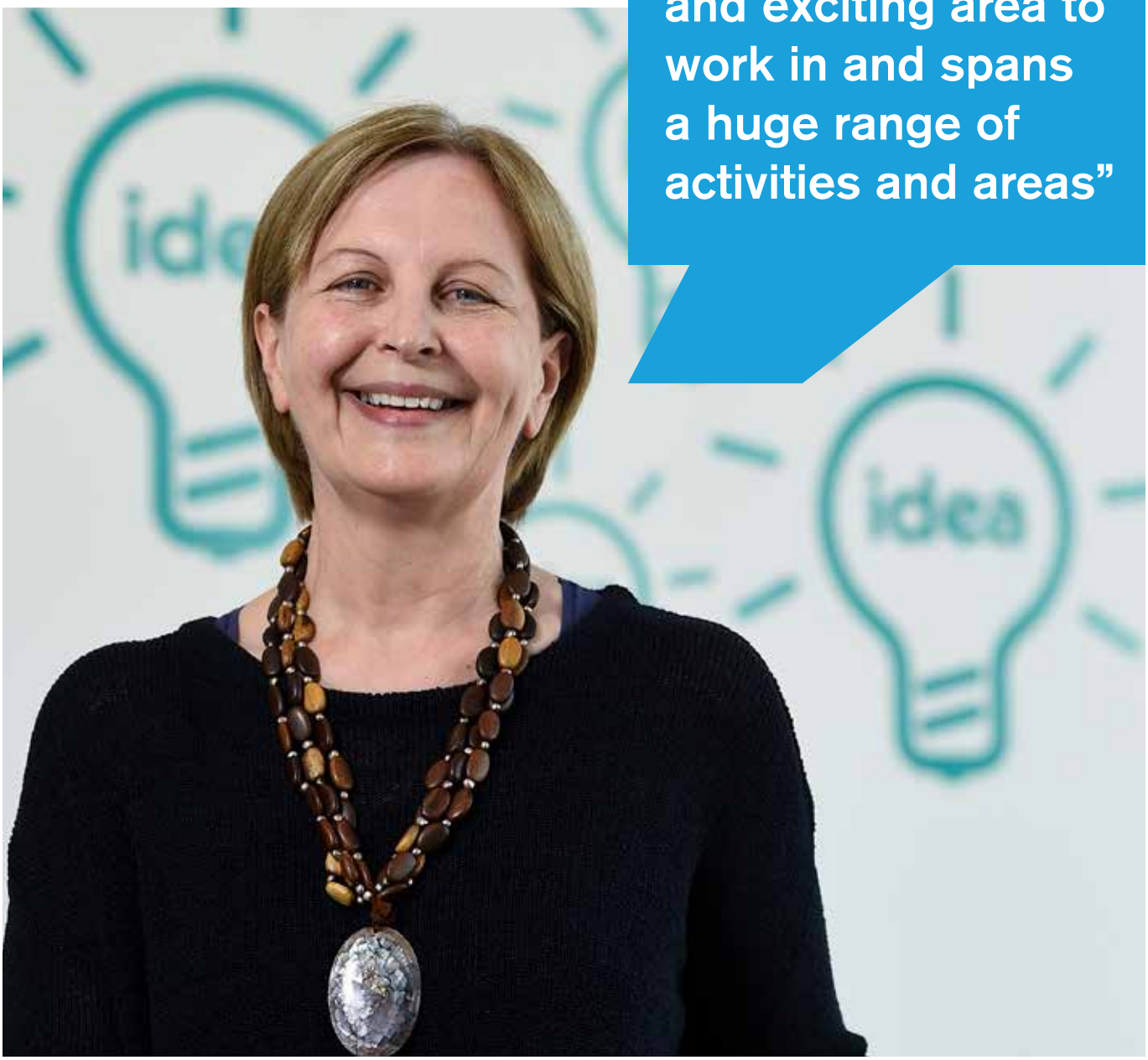
Read full interviews at *www.matrixni.org*

Prof. Eileen Harkin-Jones OBE

Bombardier-Royal Academy of Engineering Chair
in Composites Engineering, Ulster University

STEM is an incredibly interesting and exciting area to work in and spans a huge range of activities and areas – for example, the development of medical devices such as heart stents and valves. Here, engineers are designing, developing and manufacturing devices that will save the lives of thousands of people.

“STEM is an incredibly interesting and exciting area to work in and spans a huge range of activities and areas”



There should be much better quality of career guidance at school. I was introduced to engineering by a friend - there was no mention of it in our careers class. Today, Medicine and Law are still heavily promoted as the subjects to choose if you are a girl who is likely to get good A-level grades. This is such a shame, as the opportunities offered in STEM careers are so interesting and rewarding and the STEM sector is also missing out by not being able to recruit from the full talent pool.

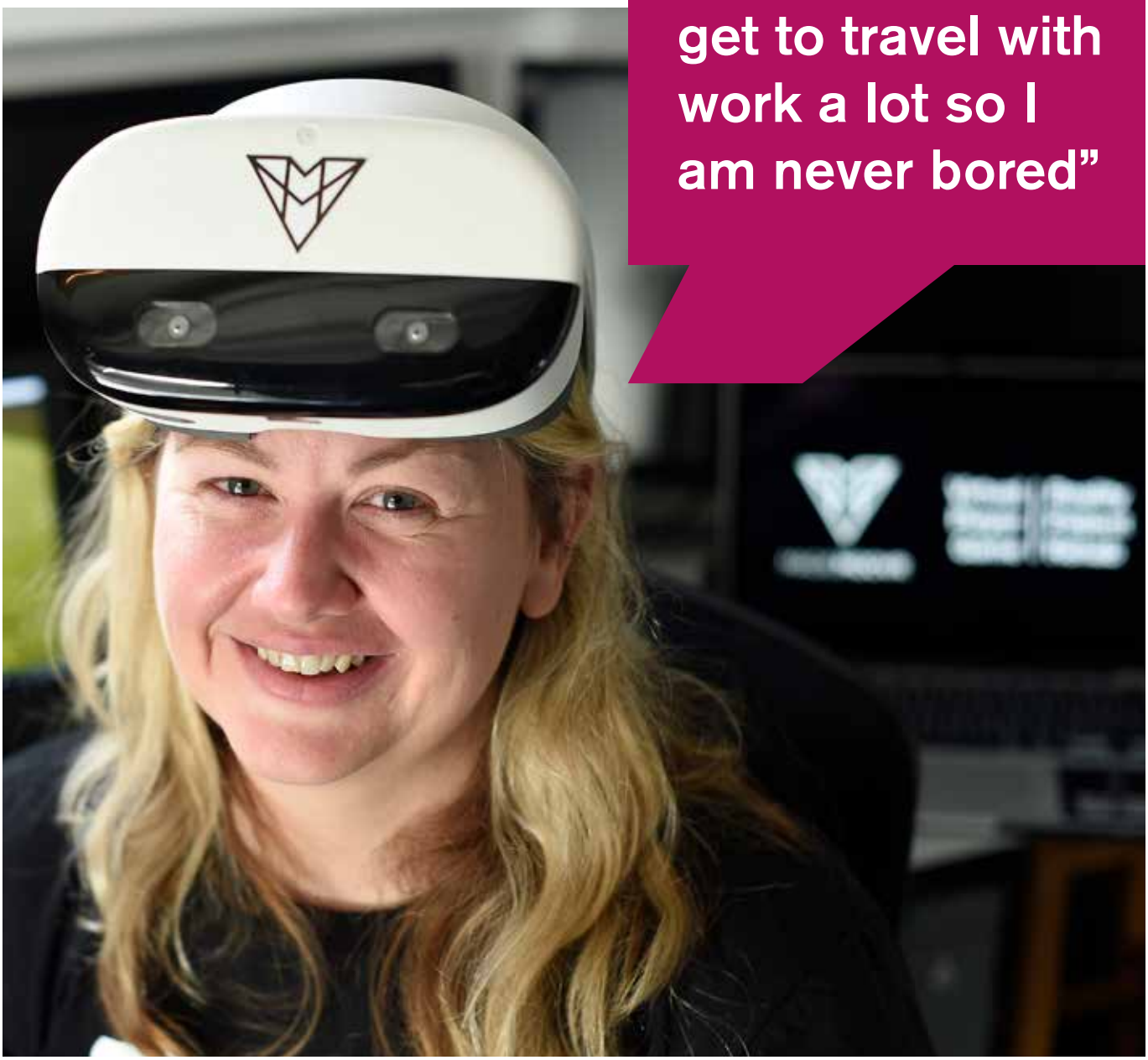
Dr. Rachel Gawley

CTO/Co-founder of AppAttic

Working in the field of emerging technologies

"I love what I do and I know I am good at it - I am proud to be a geek. Every day is different and I get to travel with work a lot so I am never bored. I get to do really cool stuff - it frustrates me that more people don't know about all of the opportunities out there just waiting for them.

“Every day is different and I get to travel with work a lot so I am never bored”



I have always been creative and never afraid to take things apart to build them up again. I was surrounded by STEM growing up, having older brothers who studied medicine, biochemistry and engineering. They would bring lab stuff home to tinker with so it wasn’t unusual to me to be a girl doing STEM. Our parents gave us the freedom to explore which was great - it was a way of life.

Emeryn Erwin

Quality Manager, Moy Park

STEM for me is definitely a very rewarding and exciting career choice – the food industry brings with it unique challenges but there is nothing better than knowing that you have personally contributed, within a team environment, to important product developments that customers love.

The food industry in Northern Ireland is so vibrant, particularly in the North and West of the region – there are so many opportunities for young people. Although I chose a traditional route through education into employment, having studied at CAFRE, Loughry campus I now also recognise the value of apprenticeships and national diplomas. These pathways offer great opportunity for young people who feel that they don't want to go down the A-level route to university.

Lesley Torbet

Systems Engineer, Thales UK

I have a passion for STEM as I feel that the subjects provide endless exciting career opportunities in fast paced and varied environments. No two days are the same and that's what makes it so interesting and rewarding.

I work in STEM, specifically engineering, as it combines my love of physics and maths along with the complexity of real life, industrial problem solving.

“It is OK not to know what you want to do as a career when you grow up!”

It is OK not to know what you want to do as a career when you grow up! Choosing the subjects which opened the doors to a number of career paths was more beneficial to me than choosing a specific profession as it has improved my career flexibility in later life.
At 16, I would have liked to hear more about the different routes to engineering like the apprenticeship schemes where you ‘earn while you learn’ as well as university routes.

Dr. Liz Conlon

Education and Outreach Advisor
Institute of Physics in Ireland

One of the highlights of my career was when I climbed to the top of Mauna Kea, an actively flowing volcano in Hawaii, to collect light beams. We were 13,800 feet above sea level, with very little oxygen. There was minimal atmospheric interference and I felt as though I could just reach out and touch the stars. It was a truly mesmerising experience.

“I am always exploring and it is extremely rewarding to know that you can contribute to solutions to real world problems”

STEM, and physics in particular is never boring, and having an inherent scientific perspective allows us to see the world through different eyes. I am always exploring and it is extremely rewarding to know that you can contribute to solutions to real world problems that will benefit us all.

Nuala Murphy

Founder & CEO
Moment Health

My path through to STEM is not traditional but I developed good interpersonal skills through my education and early career pathways. I developed competencies in connecting and communicating and valuable professional skills. My keen interest in STEM really began 10 years ago while working in industry and particularly healthcare.

> **"One size does not fit all and that it is not the qualifications that you gain, rather your aptitude, and the skills and experiences you develop along the way that matter"**

Moment Health's mission is to prioritise maternal mental health, to provide new and expectant parents with the tools and knowledge they need to sustain good mental wellbeing.
Bringing mental health issues into mainstream and having greater recognition for them is really important. Working with organisations committed to safe guarding their employees at this time of life is what's really exciting and just around the corner.

Dr. Kathryn Fee

MSc Programme Coordinator,
School of Mechanical and Aerospace Engineering, Queen's University Belfast

"I have always had a curiosity for all things science related, I love seeing the advancements that are made in the world through the application of STEM, and for me it is a thoroughly rewarding career choice.

“Engineering is such an exciting and challenging career for women”

Engineering is such an exciting and challenging career for women!! With a degree in engineering behind you there are so many avenues that you can pursue, it is not all bridges, cars and aeroplanes!

Nicole Quinn

Professional Services Engineer (VoIP-VoLTE)
Metaswitch

At school, I liked logic and calculus. I had always been interested in science, but I never really thought I could really make it. It seemed too big a thing and I was... well, 'just a girl'.

“I get a great sense of pride when I am approached by colleagues who ask me for advice or help with troubleshooting”

Now, as a junior engineer I get a great sense of pride when I am approached by colleagues who ask me for advice or help with troubleshooting.

Zara Shiels

Research Chemist
MOF Technologies

I've loved chemistry since 3rd year at secondary school - when my chemistry teacher told us about his previous career in the cosmetics industry I realised that chemistry was linked to a lot more than I had previously known about.
I work in STEM because I love learning new things and making new discoveries.

“I work in STEM because I love learning new things and making new discoveries. ”

The hardest thing about it is that there are long periods of difficulty when nothing will work, there will be experiments for weeks, months sometimes even years that won’t work. All of a sudden one day, something new will come to you, something you were missing or some strange factor and it will all work. It is so rewarding and exciting when you finally understand or achieve something you have been struggling with!

Tanya Matthews

Product Specialist

Kainos Evolve

When I accepted my place on an IT apprenticeship I had doubts over whether I made the right choice and whether I would gain the right experience from this decision. Now, looking back I know that this was the best decision for gaining career experience and ultimately puts me in a better position than studying full time would have. Working in the healthcare sector within IT and being part of and witnessing the digital transformation that our products and services have delivered to clients is the most rewarding feeling.

"NHS Foundation Trust recently reported an annual cost saving in excess of £3million as a result of implementing Kainos Evolve"

One of our recent projects at Ashford and St Peter's Hospital NHS Foundation Trust recently reported an annual cost saving in excess of £3million as a result of implementing Kainos Evolve, an Electronic Medical Record (EMR) system which enables mobile digital access to medical records across the Trust. Hearing a success story like this and having been part of the implementation makes you realise what a difference your job makes.

Dr. Sally Montgomery OBE

Freelance Consultant

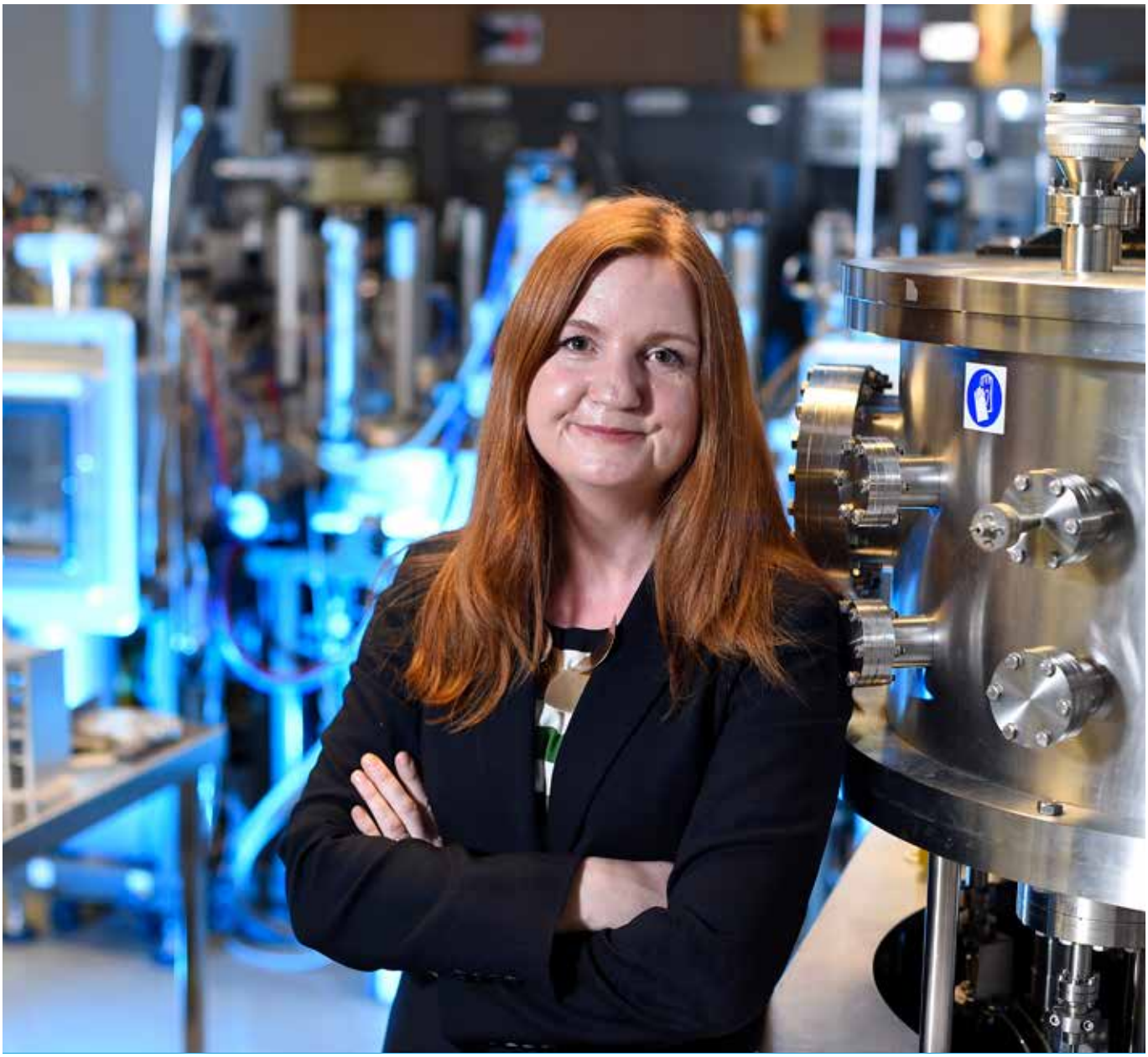
My father was an engineer and taught me the power of thinking through problems, planning, working hard and following my dreams. Opening W5 was very much a career highlight for me – W5 was an instant hit and it is wonderful seeing people (young and old) learning while having fun with science.

“Nature and finding out how the world works is truly fascinating”

I have worked in STEM because it is an extremely rewarding career. Nature and finding out how the world works is truly fascinating and having the ability to use science and engineering to help solve real-world problems is extremely fulfilling.

Jayne Brady MBE

Partner Venture Capital Firm
Kernel Capital



I loved Maths at school and I knew I wanted a career with a diversity of career routes that had the potential to deliver a global impact. Engineering to me was the obvious foundation qualification that enabled me to access those types of opportunities.
My engineering background has allowed me to work in Blue Chip multi-national corporations, start-up technology companies, work extensively overseas and ultimately move into assessing investment opportunities.

“I would tell my 16 year old self to believe in their potential and to take risks”

I can’t think of any other career which provides such a broad transferable skillset to equip me on my career journey.
I would tell my 16 year old self to believe in their potential and to take risks to try and capitalise on that potential. Fortune favours the brave and young!

Rebecca Walsh

Service Designer

Northern Ireland Public Sector Innovation Lab

When we went on holidays I always asked to talk to the pilots to see what they were doing. I was taken to watch the planes take off and land more times than I can remember. I wrote to all the big airlines when I was 10 years old to ask how I could become a pilot and I started flying lessons at 16 – before I was driving. That's why I wanted to do a degree in Aerospace Engineering. I wanted to understand how planes worked and my passion for STEM started.

“I have presented in the most amazing places and I don’t think that would be possible in some other careers”

I work in STEM because of my love for engineering, maths and design. I have travelled the world, I have met the most amazing people, I have presented in the most amazing places and I don’t think that would be possible in some other careers – the opportunities are vast. I presented at an innovation event in the New York Stock Exchange about 7 years ago. I was the only female that presented during the event and I was only 24! It was the most unbelievable, nerve wrecking experience but it gave me confidence to know that I could get up in front of a room full of people and present.

Dr. Fionnuala Lundy

Senior Lecturer, Centre for Experimental Medicine, School of Medicine, Dentistry and Biomedical Sciences, Queen's University Belfast

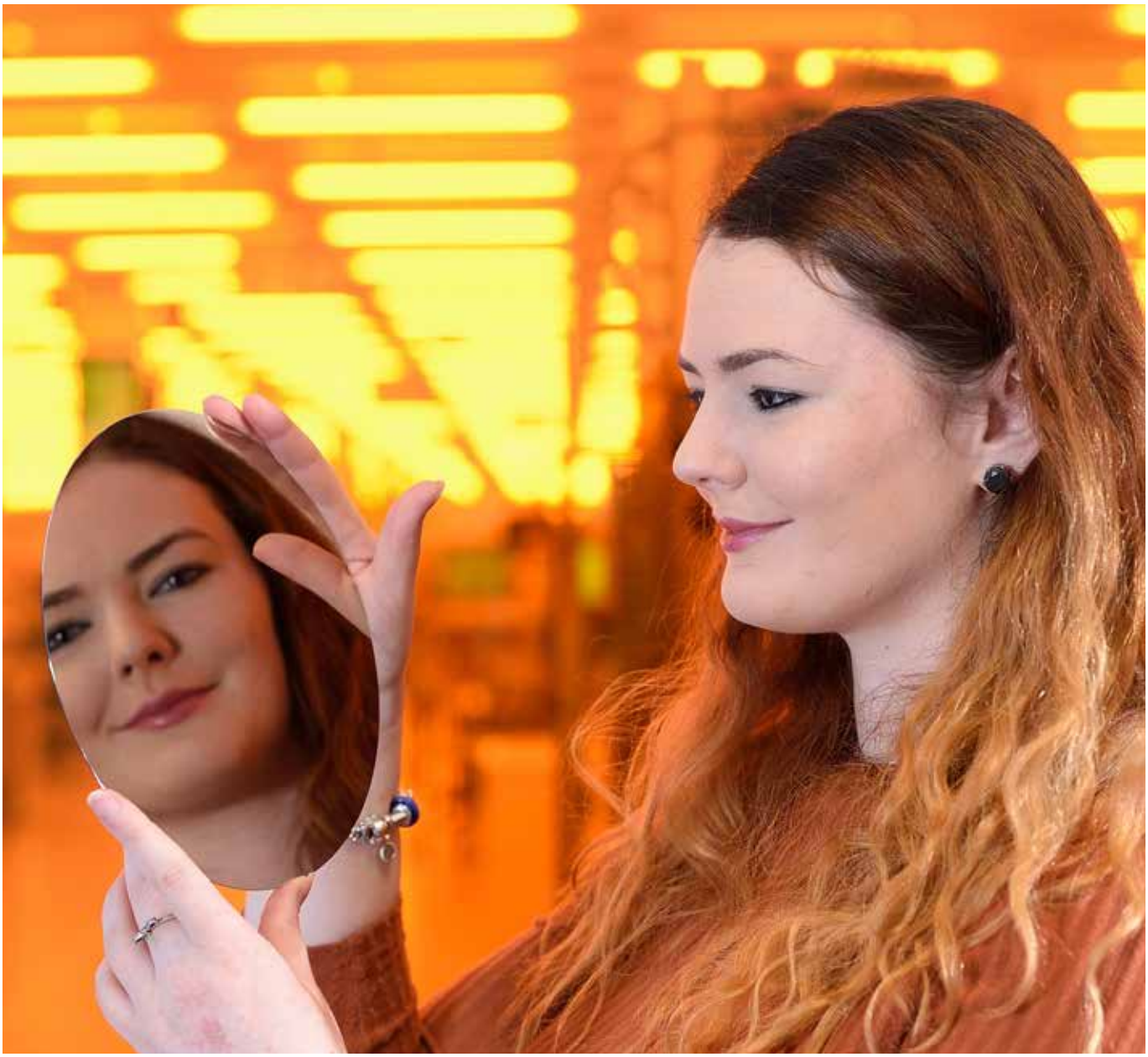
"I love working in STEM, it is both challenging and rewarding. Doing research and running a research group involves lots of hard work, but when you see results that help to explain a new idea or prove a theory that you've come up with then all the effort is worth it.

“I love working in STEM, it is both challenging and rewarding”

I can truly say that I’ve had the opportunity to visit many fantastic parts of the world as a result of my work and it’s one of the things that inspires me to work hard.

Linzi Craig

Research and Development Engineer
Seagate Technology



I've been passionate about STEM for as long as I can remember and my parents were always so supportive – they encouraged my creativity when I was younger and always made me feel that anything I wanted to do was possible. I had dreams of being a marine biologist, a forensic scientist and many other odd career choices for a child… they always emphasised that if I worked hard and was focused I could be whatever I wanted and they were right.

“I absolutely love my job, it is the perfect mix of engineering, communication and collaboration.”

I absolutely love my job, it is the perfect mix of engineering, communication and collaboration. I would love to be able to inspire the next generation of female engineers, to show them that STEM is not just for the boys! There are so many inspiring young women in Northern Ireland driving STEM forward and just to be a part of the push in the North West is a privilege.

Claire McAlinden

Operations Director, Faculty of Engineering and Physical Sciences, Queen's University Belfast

"From a very early age, I was always interested in solving problems and mysteries, and wanted to know how and why things worked the way they did. Working within STEM is extremely rewarding as it is very diverse. It is an area where the ability to problem solve is fundamental and an area where experimenting and trying new things is essential.

“Working within STEM is extremely rewarding as it is very diverse”

Contrary to some perceptions, working in STEM does not only mean working within an industrial environment and using your brain technically, either with equipment, computers, or designing & building things, it requires you to be able to work well with people, to collaborate, to inspire and to deliver solutions to global challenges that affect every aspect of our daily lives. That is what makes it such a flexible and rewarding career choice.

Fiona McMaster

Electrical & Mechanical Design Engineer
Cogan & Shackleton Consulting Engineers

I had an interest in Physics at an early age and I always found STEM subjects stimulating. I have found working within the construction industry very rewarding – I get immense satisfaction from completing a job and handing it over knowing that the work is of a high standard and designed well.

“Training in one area can lead to so many other outlets and can take you across the world if you have a mind for travelling”

The construction industry provides a great option to be self-employed by attracting a good wage while suiting your personal needs. Training in one area can lead to so many other outlets and can take you across the world if you have a mind for travelling.

Rachel Pattison

Terex Business System Manager

Terex - Materials Processing

I work in a STEM environment because that is what I'm interested in and always have been. Every day is a different experience, a new problem to solve and a query that needs answered. It is tough especially as you progress through your career and gain more responsibility and accountability, but there are so many rewarding experiences it is worth all the hard work. I would encourage young people to seek out as much information as possible on the numerous opportunities and career paths that are open to

“Every day is a different experience, a new problem to solve and a query that needs answered”

you when you complete engineering or any STEM degree.
One ambition I have is to develop a role to manage longer term business strategies including the use of smart technologies, specifically relating to Industry 4.0. This is one of the main advancements that I believe will truly change the way manufacturing companies produce. Working towards the use of technology in manufacturing will bring with it more of a need for a diverse workforce which will only enable greater opportunities.

Dr. Michaela Black

Head of School of Computing and Engineering
Ulster University

STEM technology transforms lives and working in this area, you can be part of this by developing applications for health, games for health, tools for stroke rehabilitation, solutions for data analytics, robots for defence, robots for care at home for dementia patients. The opportunities are endless and there is wide range of fields you can work in e.g. health, finance, insurance, education etc.

“When I was 16, I would have liked to have known more about employability skills e.g. people skills”

Focus less on career titles and more on what impact you want to have in the world – enhanced education, enhanced health? I strongly believe that everyone can problem solve and be creative and therefore if you think big, you can find your niche.
When I was 16, I would have liked to have known more about employability skills e.g. people skills. It is really important for young people to gain lots of experience at every opportunity.

Inspired to learn more?

Read the full interviews at:
www.matrixni.org

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