ROYAL SOCIETY OF CHEMISTRY

International collaborations create chemistry

Science is an international endeavour and collaborative in nature. It can offer the widest benefits to society when researchers from different backgrounds, be that country, sector or discipline, come together to share knowledge and expertise. Participating in EU Science programmes is an important way of achieving this.

Whether advancing core scientific knowledge or tackling global challenges, UK chemistry plays a unique and leading role on the global stage. We know that in Horizon 2020, the current EU Framework Programme running from 2014–2020, UK scientists led one fifth of all projects from 2014–2016.

As the UK leaves the European Union, we seek to explore how to maximise the benefits UK chemistry can bring to science, society and the environment and to our economy. We must ensure:

- mobility for scientists: that the UK can still attract top scientists from around the world to live and work and that UK scientists can continue to work internationally;
- continued and enhanced collaboration, including access to European and international networks, talent and facilities;
- continued access to vital research and innovation funding;
- continued sharing of data and expertise to underpin a common regulatory framework for collaboration and trade.

We represent a global and interconnected network of chemical scientists with members in 120 countries, including across EU member states, and wider chemistry communities throughout the world. Many of these scientists are active participants in European Framework Programmes such as Horizon 2020.

We set out to understand how EU funding programmes have helped chemists in our community to advance the chemical sciences for the benefit of humanity. We interviewed researchers and entrepreneurs from across the UK and from the EU about their experiences of EU Framework Programme funding. This booklet presents some of those case studies and the key lessons from them.

October 2018

Case studies

The five case studies we present here highlight some of the unique opportunities European Framework Programmes provide, from funding and facilities to collaborative networks, access to talent and the ability to inform global policy.

The case studies illustrate how these pan-European collaborations have advanced the science of marine biodiversity, atmospheric chemistry and materials discovery, leading to advances in the treatment of Alzheimer's and epilepsy, better understanding of how to improve air quality and faster, more effective pathways to discovering new materials. They show how Horizon 2020 has supported the commercialisation of a catalyst technology that uses waste carbon dioxide to reduce our reliance on fossil fuels in plastics manufacture, and cheaper, more efficient microfiltration technology that has applications ranging from air filtration to antibody production in pharmaceuticals.

The universities and SMEs we spoke to all highly value participation in EU framework programmes. They report that these offer unique opportunities for collaboration, in particular access to international networks, the most talented scientists from across the world, large-scale facilities and in some cases, the opportunity to use the scientific findings to inform global policy on key environmental issues.

In addition to the value of the funding, the university-based researchers we interviewed value the international networks and collaboration opportunities the framework programmes can offer. They feel these benefits are irreplaceable. In one case, this enabled a consortium to take a whole-pipeline approach to drug discovery, bringing together experts in science, policy, administration and publicity.

One of the case studies highlights the additional investment to a region that EU funding can leverage: in this case £81 million of joint industry, government and university investment in the city of Liverpool and decisions by companies like Unilever and Croda to locate near an EU grant-winning chemistry department.

The SMEs we spoke to place a higher value on funding, but also described the benefits of having a mentor in another EU member state, which the framework programme SME instrument includes, and of being able to recruit highly skilled specialists wherever they are from.

EUROCHAMP-2020

Professor Hartmut Herrmann,
Leibniz Institute for Tropospheric Research (TROPOS)

Professor Hartmut Herrmann at Leibniz-Institut für Troposphärenforschung has used European funding to initiate promising interactions with industry. SMEs in particular have used his consortium's atmospheric simulation chambers to validate innovative new instrumentation.

Institution: Leibniz-Institut für Troposphärenforschung
Research project: EUROCHAMP-2020
Funding: H2020 Infrastructure grant

Professor Hartmut Herrmann is a member of an integrated infrastructure project within the Horizon 2020 programme, creating and supporting atmospheric simulation chambers. The Eurochamp-2020 project is co-ordinated by Prof. Jean-Francois Doussin at LISA, Creteil, Paris, France. Prof. Herrmann explains that his project works at the interface of atmospheric chemistry and environmental research and the consortium provides the most advanced EU chambers for external users throughout Europe. He says: "The idea is that you can use these chambers to better understand atmospheric changes, air quality and the impact on health and environment.

"We are close to finishing the second year. The original proposal was submitted in March 2016, and we started the project in 2017. The funding itself was for research infrastructure. In our case that was specifically for the structures themselves. On this project, there are 14 groups that form a consortium. The structures are essentially reactors – for instance, ours is a Teflon structure, roughly 20 cubic meters inside, and we run chemical reactions in those chambers that measure how they occur in the atmosphere so that we can characterize them.

"There is a lot of chemistry involved and the consortium includes physical chemists, like me, and a very prominent group of European atmospheric chemists. In the simulation chamber, you can study more complex systems. For instance, you can run a reaction in a mixture of gases and particles, which is a good proxy for London air, and you can simulate how, under those conditions, things like particle or ozone formation will occur and you can characterize this in the chamber."

International and industrial partners

The project is led by its French coordinator Prof. Jean-Francois Doussin and includes other members from France, Germany, Ireland, Finland, Greece, Switzerland, Italy, Spain, Romania and the UK – represented by the National Centre for Atmospheric Chemistry via the University of Leeds.

Each chamber has its own characteristics – the University of Leeds reactor can be adjusted for higher and lower temperatures and another group at the University of York is running the most complex atmospheric mechanisms to simulate atmospheric chemistry in the real world. Hartmut says: "On one hand the UK groups are important for the basics and on the other hand they are important for the applications to real world problems – if you run such a model you must first test it at a simulation centre, so the UK brings a lot of important skills. It is vitally important to have the UK groups participate."

Interaction with industry is an equally important part of the project – not creating spin-outs but working with companies who use the chambers to get their new instrumentation characterized and there are around 20 successful collaborations all over Europe already. Hartmut argues that this is particularly beneficial for SMEs,

many of which are advancing innovative measurement technology and consultancy companies for air pollution cases.

Hartmut says: "We have a programme called *transnational access*, where you can become a certified user of the chambers. If you are successful, you can use the chamber and be supported under the H2020 programme. I think it's important to note as each of the chambers is a multi-million pound installation and typically it would be hard for many companies to gain access."

Positive impacts for the environment and human health

Wood burning is an issue in Europe which, over the winter, degrades air quality significantly and which is a current focus for Hartmut's chambers. He explains: "For air quality, the burning of wood is a huge step back. For instance, in Germany wood burning over the winter period produces more particulates in the air over a year than traffic does. This is something we are studying at the moment, particularly in urban areas as this problem is not unique to Germany but is also occurring in places like Paris as well.

"Our activity is very closely watched by environmental agencies. I am aware that there is regulation in the pipeline because at some point, if the air quality in winter gets worse, you have to do something. Of course, the wood burning is just one example. Other issues are, as you would expect, exhausts from cars. People take in the fumes from cars which can have consequences for human health. The atmosphere is essentially a chemical reactor: in some cases particulates can be degraded but can also be functionalised and become worse for you. With a chamber you can investigate the aging, the destruction the functionalisation of a compound when exposed to the atmosphere."

Publications and prizes

With a consortium of 14 research groups there have been a significant number of important papers published throughout the project. Hartmut says: "Globally speaking this consortium is representing the best and most advanced chambers in the world. There have been some chambers in the US but in this specialised infrastructure, Europe is the elite, far ahead and has the best community.

"Regarding the training of chemists, through this *transnational access* researchers are trained from one chamber to another and learnt about techniques that they don't have at home. We normally have about 20–30 PhD students working at these chambers per country and we organise course work as well to help train them.

How important has EU funding been towards the success of this project?

Hartmut concludes: "It is essential. Without the EU funding we could not have done this. We probably could have built our chambers but we would not have had the international or topical collaboration and we would not be able to focus on issues such as wood burning etc. It is very important to bring the installations together.

"We could even say it is going further now as this partnership is part of the ESFRI roadmap and that means it will further develop into a steadily funded effort and it means the installations will be handed back to the member countries in the long run. To receive this funding you need to have received EC funding three to four times – we are talking about continued funding over the next 15 years here, and what we need to determine is what this would look like should the UK not be eligible to be part of that programme going forward, which we certainly do not want."

Econic Technologies

Dr Rowena Sellens

Dr Rowena Sellens at start-up Econic Technologies has used a Horizon 2020 SME instrument award to commercialise innovative catalyst technology that could soon prevent the emission of ca four million tons of CO_2 per annum – the equivalent of taking two million cars off the road.

Company: Econic Technologies
Funding: Horizon 2020 SME Instrument

Econic created a proprietary catalyst technology that allows plastics manufacturers to replace part of their oil-based raw material with waste CO2 to produce cheaper, higher-performing polymers. Econic's CEO Rowena says: "There are substantial environmental benefits from the technology –for every unit of CO_2 used in manufacturing these materials, a further two are abated, due to the reduced reliance on oil based feedstock. In our first target market, which is polyols for polyurethane, we predict that with a market uptake of 30% by 2026, between three and four million tons of CO_2 per annum will be abated, which is the equivalent of taking two million cars off the road."

Funding to face key challenges

Rowena explains that the EU funding grant has been key to addressing challenges in commercialising the technology:

- proving the technology is scalable and that retrofitting it to existing production plants is cost-effective;
- demonstrating the viability of the CO_2 containing polymers in relevant market applications;
- identifying and engaging early adoption partners;
- ensuring they have supply partnerships to underpin the manufacturing and supply of the catalysts.

The €2.4 million grant was awarded in 2016 and the team have designed, built and commissioned a pilot unit that not only demonstrates the catalyst technology in action, but also validates estimates of what retrofitting really means to potential users and what that would actually cost. Outputs also include case studies and samples to support the company's marketing activity and papers presented at key trade conferences. The progress in the first 18 months of the Horizon 2020 funding was fundamental in the completion of a £7M investment round.

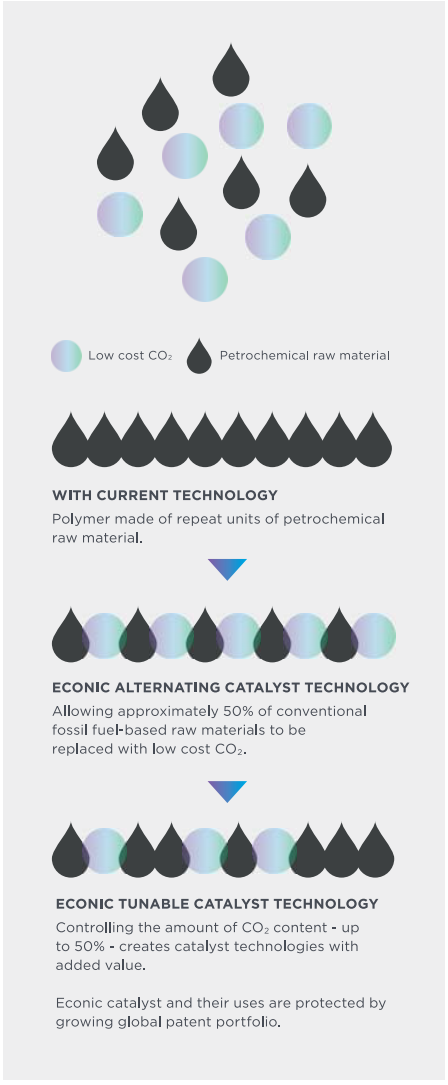
Rowena says: "We've underpinned all of that with cost/benefit models, and all of that additional information and proof has allowed us to engage a number of potential adoption partners and substantially strengthened our customer pipeline. On the supply side, we have worked with a number of manufacturing partners who will provide the supply capabilities for the catalyst."

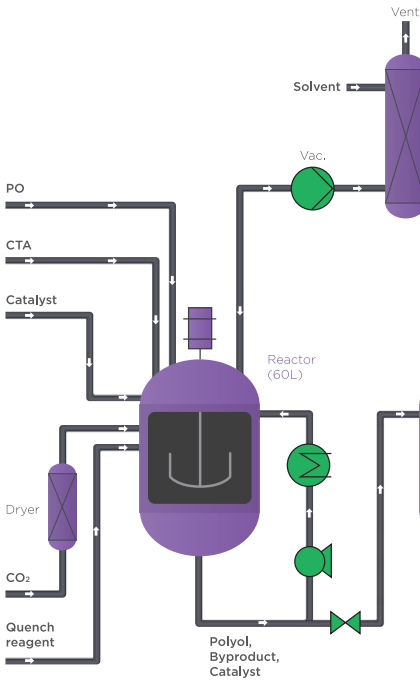
Recruitment and reach beyond borders

Rowena explains that Econic recruited from a number of different groups with relevant expertise in the field from across the EU and wider. She says: "We currently have 30 employees from across the EU and the wider world and there is very much a diverse mix of male and female.

"I think, like many specialist companies, you look for people that have relevant experience in the types of tech you are doing and our employees have been working in groups inside and outside the UK on particularly strong research that just made them good candidates. [Brexit] will certainly impact on the pool we are able to recruit from in the future due to concerns people have. As an SME or start-up, you already have some vulnerability until you become a profitable, self-sustaining business.

CUSTOMER DEMONSTRATION





"You have to drive progress all the time to get fresh funding and investment to take us through to the next stages of our business. That is a risk people take when joining an SME – if they believe in the focus and direction of the business, that's why they join in the first place, but if there is an added risk or hurdle over whether you will be welcome in the country, then that will create another barrier. We talk with our existing employees who certainly feel more vulnerable since the Brexit referendum."

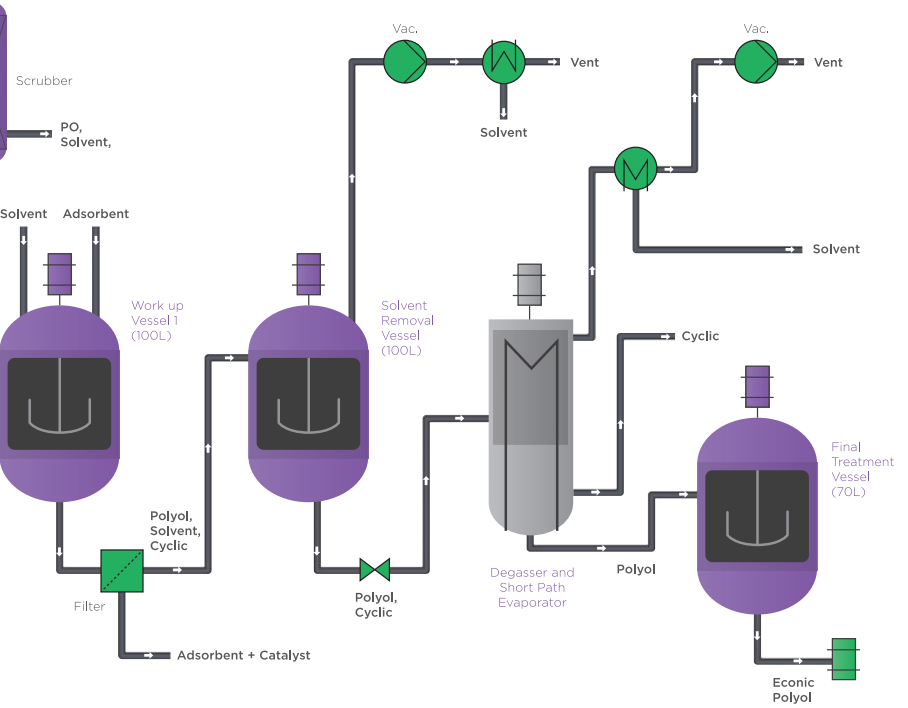
Potential expansion and influencing policy

Econic currently have a small amount of revenue through early stage development activity with partners, though have not yet reached profitability. That is predicted to change over the next three-to-five years as customers start to scale the technology and Econic activity expands into further markets and applications.

Rowena says: "We talk about this as a first market, as the research foundation and IP we hold would enable us to grow from this tech platform to go into other markets. Of course, from a company point of view it's important that we are successful in our

FACILITY

ECONIC
TURNING CO_2 INTO ENDLESS POTENTIAL



first target market, which is a substantial market in which we expect that we could uplift the value of polyols to polyurethane – currently a $20 billion market – by $1 billion, through the economic benefits of this technology."

Rowena explains that while it is hard to see an individual technology having a significant impact on legislation, early valorisation on waste CO_2 is really important. She says: "This tech doesn't solve the CO_2 problem, (only taking the equivalent of two million cars off the road), but we can have real impact in the near term, by 2026.

"Doing that, and creating added value through it, is a foundation to encourage others into looking at what you can do and how you can address carbon issues. We have been involved in a number of policy discussions, both industry and sector wide, around this theme.

"There are technologies talked about that could make a huge impact but they are at best longer term and some still theories, they are not three to four years away from having a big impact. I think early commercialisation of a value-creating, CO_2-reducing technology should actually be a tangible foundation stone for developing a low-carbon economy, and in that sense it could influence policy."

PharmaSea

Professor Marcel Jaspars, University of Aberdeen

Professor Marcel Jaspars built an international collaboration, using FP7 funding to find treatments for conditions such as Alzheimer's disease and epilepsy. Their goal is to find active compounds to fight such central nervous system diseases – as well as looking for new antibiotics – from marine bacteria and fungi, typically in deep sea and cold environments such as the Arctic, Antarctic and deep water trenches.

Professor Marcel Jaspars
Institution: University of Aberdeen
Funding: FP7

Professor Marcel Jaspars' team at Aberdeen University worked with both industry and academic partners across European institutions, on a project funded by the final round of the EU's FP7 programme, finishing in March 2017. Marcel explains: "What we do mainly is discovery of natural products from marine sources – invertebrates, deep-sea bacteria and fungi. We have done this for a very long time so it was obvious that we should apply for this particular call and put together a big team. Really, this was right in the middle of our skill-set.

"The University of Aberdeen was the scientific lead on the project – the administrative lead was KU Leuven [in Belgium] because of their standing and knowledge of dealing with EU grants. This was great for me as it allowed us to focus on the science without getting caught up in the administrative side of things".

A pipeline of international partnerships

The project included researchers from 24 partner institutions, from 14 countries, including Italy, Spain, Belgium, Denmark, Norway and Germany, which are part of the EU funding programmes, as well as wider international partner countries such as China and South Africa.

Marcel believes the international make-up of the collaboration brought together complementary expertise and skills. He explains: "We had everything from the beginning to the end of a drug discovery project so we decided to treat things as a pipeline – we had groups with expertise in isolating bacteria, which was done in Ireland, Norway and also in Italy. Then we had the building of the extract libraries, mainly done in Spain and Norway, but also in China and some work in Costa Rica.

"Next was the biological screening of the libraries: this was done in Leuven, Spain and Norway as well as at partner companies. We had scale-up and downstream testing which was done in part at a company in Austria and in a veterinary school in Spain. Finally we had a big partnership on governance and policy of the oceans, which resulted in us getting involved on a UN process that's still going on.

"In terms of skills brought by the international nature of the project group, much was complementary with specialist areas of science, policy, administration and publicity, so it ended up working really well – it was a very productive consortium, and very positive in terms of outcomes."

A patent success

So far, the PharmaSea project has filed two patents, with a third one on the way. The first is an anti-Alzheimer's series of compounds, which has already reached the advanced stage of having derivatives made and tested. The second patent, which covers a series of compounds that have activity against epilepsy, has been submitted and describes a new drug prototype, and there are strong hopes for its success.

Marcel explains that the collaboration has not been without its challenges for some partners: "Unfortunately, one of the partner companies failed – which was disappointing, though not uncommon for SMEs. The company that we got in to replace them – SeaLife Pharma – was subsequently sold, so that was a success in the fact that they were part of a big European consortium and their association to a big EU-funded project like this would have made them a more attractive proposition.

Positive international impacts

Marcel explains that **the biggest success his team didn't foresee was with UN policy.** He says: "60% of oceans are not covered by international laws to protect marine biodiversity. Our work showed what the commercial value might be of this deep sea biodiversity. We started with input at an event at the UN in 2014 and then in 2015 the process went into a stage of formal negotiations, and we were invited to all negotiations by the International Union for Conservation of Nature, who were also one of our partners.

"Between us we have participated in over 30 events to present the scientific aspects of such an agreement. We combined a number of ideas into a policy paper that has been received very well and subsequently used as a basis of a couple of meetings where the ideas were discussed. All of these things are long-term but they came from the PharmaSea project itself and the PharmaSea brand turned out to be a very powerful thing."

"The FP7 funding was essential. From our background and the work we had previously done, we were in a very good position to apply for the grant when the opportunity arose. Many European agencies like the ESF are very helpful in getting people together and saying this is the kind of thing you should be thinking about doing, so I like to be involved in EU level reports and things like that. Since the Brexit vote I've been asked to be part of more EU science advisory boards and committees than ever before and, while they are afraid that we might lose the ability to have UK partners in H2020 and its successor, they still want the UK to provide expertise on advisory boards.

"For me it has been hugely positive to have friends all around Europe and to have them include me in their projects. It has given me the reputation of a person who can run a very large project well. I learnt to deal with some very difficult situations throughout the project so it was a great learning curve for me personally. Scientifically, to be part of patents that could prove useful is also fantastic."

RobOT

Robust Organic Tectonics: Professor Andy Cooper, University of Liverpool

Professor Andy Cooper at the University of Liverpool has used European Research Council funding to advance his fundamental research developing new ways of finding useful materials, with the project contributing to significant industrial investment in the city of Liverpool itself.

Institution: University of Liverpool
Research project: RobOT – Robust Organic Tectonics
Funding: Framework Programme 7 ERC Advanced Grant

Professor Andy Cooper leads a research group at the University of Liverpool that uses experiments, computational modelling and robotics to develop better ways of discovering new materials. The research is fundamental, as it is concerned with materials discovery – helping scientists to find potentially useful materials more quickly – but the techniques that the team have developed have the potential to impact a variety of sectors and industries.

"It was definitely more foundational research, rather than research for applications," says Andy. "However by doing that, finding new ways to accelerate the discovery of batteries, fuel cells, catalysts..., you can actually have at least as much impact as when you work on those materials specifically. It is the kind of thing that the ERC funding allows, with its blue skies mission. Not all programmes allow this and increasingly funding is becoming challenge-led whereas the ERC is not, it is science-excellence driven."

The researchers use sophisticated computer modelling to map how molecules assemble and crystallise to form new materials – each molecule leading to a myriad of possible structures with different properties and possible applications. **They then investigate the properties of the materials using robotics to test hundreds, or even thousands, of materials much more quickly than previous techniques allowed.**

An international team

Andy's main collaborator is Professor Graeme Day at the University of Southampton, but funding from the ERC enabled him to recruit top scientists from Spain and Poland, as well as collaborate with other groups outside of the EU. "The EU connection allowed us to hire the best people from Europe," says Andy. "We were looking for a very specific set of skills in crystal structure prediction, and there are not so many groups in the world that have such skills. If you are only trying to recruit from one country then it's very difficult to find those skills. We had no applicants from the UK who had the precise skills needed.

"It's not like hiring a doctor or a lawyer, these are areas of research where there are maybe fewer than 50 people working in them. It's not unreasonable to say that, for this research, it would not have been able to happen without hiring from the EU."

Not only was Andy able to recruit highly skilled scientists to his team, but those scientists have since secured permanent positions in the UK, strengthening the country's scientific capacity and skills base.

Attracting investment in the city of Liverpool

The funding Andy's group have attracted has also helped to build a case for major UK government and industry investment in the city of Liverpool itself. In a £81 million partnership with Unilever and the Higher Education Funding Council for England (HEFCE), the University of Liverpool built the Materials Innovation Factory (MIF) in 2016, developing a unique materials chemistry research hub that aims to be

a world leader in computer-aided material science. Andy believes the prestigious European funding, as well as grants from the EPSRC and InnovateUK, combined with the local Unilever site at Port Sunlight, built a strong case for investment in the MIF, which has brought hundreds of jobs to the city.

"The ERC has a certain prestige to it and we have had four of these ERC Advanced grants in Liverpool," says Andy. "Large companies such as Unilever, when they are looking to invest in an area, bear these things in mind. There are now 80 Unilever staff that have relocated there from Port Sunlight, we have a Swiss company relocating its office there, Croda has an office there... That's brought jobs into Liverpool and we have some commercialisation activity going on, with spin-out companies being created. This fundamental ERC funding was quite central to this investment and the knock on effects are considerable. These things are linked and that's an important message to the government."

Fundamental research with global applications

Despite the fundamental nature of Andy's research, the team have already filed two patents: one with applications in the nuclear reprocessing industry, and one for a porous material that can remove formaldehyde and other related carcinogens from the atmosphere. **The initial European funding has since opened doors to much wider international markets.** "Formaldehyde release in buildings is a big issue, especially in Asia, and we have a technology that goes some way to solving this problem," says Andy. "We are getting close to scale up. The Chinese postdoc who did that work has won two prizes: the RSC Emerging Technologies Competition in 2016 and another prize in China for entrepreneurial development. It's a global market because it's a global problem – we are also looking at reducing formaldehyde levels in cars and other closed environments."

With patents and a number of high profile research papers, Andy's team are hoping the success of the ERC funded project will enable them to secure further funding. "It's a big concern for me if the ERC programme is not accessible to the UK, because at the moment, both inside and outside Europe, I don't see another scheme that is even remotely like the ERC. I think we have done some of our best work under it."

Smart Separations

Dr Hugo Macedo

Arriving in the UK as an Erasmus student 13 years ago, Dr Hugo Macedo started his own company, Smart Separations Ltd, initially working out of his kitchen, garage and even his uncle's shed. The company now has its own office and laboratory space in London and 14 staff on its payroll, with European funding playing a vital role in its development.

Company: Smart Separations Ltd
CEO: Dr Hugo Macedo
Funding: Horizon 2020 SME Instrument Phase 1 & 2

Dr Hugo Macedo was born in Portugal, studying Chemical Engineering at the New University of Lisbon. He moved to the UK initially under the ERASMUS programme in 2005, an EU student exchange scheme that enables students from countries within the EU to undertake placements in other EU countries. He was then invited to stay on for a PhD position at Imperial College London, to develop a method to produce human blood in the lab (which he did!). He started his company, Smart Separations, five years ago, initially working out of his kitchen.

The company has patented an innovative technology that allows them to produce ceramic filters with self-assembled, controllable pores of a variety of sizes. "Microfiltration is a poorly explored field," explains Hugo. The technologies that are there are either very expensive or very inefficient. We came up with a way to create pores that are conical and self-assembled in the manufacturing process. We then use the tech – where our IP lies – to cut slices of these membranes and depending on where we cut the cone, we have different pore sizes. This is a game changer as we do not need to go back to the drawing board and create a new pore size each time the customer needs a new pore size – we can cut whatever pore size the customer needs."

The microfilters Hugo's company can produce have a variety of applications, from air filtration – removing pollen, dust or other allergens in an antibacterial surface – to antibody production in the pharmaceutical industry. **Hugo's filters are also reusable and recyclable, with a longer shelf life and reduced environmental footprint.**

Building a business and the importance of international mentoring

Hugo founded Smart Separations on the back of an InnovateUK SMART award, and this funding enabled him to apply for the EU's SME Instrument schemes, designed to 'boost fast company growth and market-creating innovation'. Their first grant under this scheme was a €50,000 phase 1 grant that allowed Hugo's team to employ a consultant to draw up a business plan. "[The H2020 grant] was vital" says Hugo. "It wasn't just the business plan, it's everything that comes with it: all the contacts we've had and the changing approach to our business.

"It provided access to the EU mentorship programme. We had access to, in this case, an Austrian mentor, and he helped us immensely by opening up the door to Austria, as well as other countries, where we could tap into different expertise. I think that is something we are slowly forgetting in the UK. Since I started in 2013 I've had the chance to be part of the Growth Accelerator programme that InnovateUK had but somewhere down the line they killed off that programme. Even though in the past we used to have that support from mentors, now we don't have it anymore, we just have the grant. This is something the SME instrument does bring."

Scaling up and going to market

The phase 1 support also gave Hugo and Smart Separations a strong position from which to apply for further funding, and they successfully secured an InnovateUK Industrial

Strategy Challenge Fund grant and phase 2 funding, of €2.8 million, from the EU's SME Instrument programme. "The SME phase 2 is a game changer for us as it brings a visible amount of money for us to use towards scale-up of that technology initially conceptualised in my kitchen. We are at that turning point from being an R&D company to actual manufacturing. We have just started this grant and it allows us to go on to the next level to manufacture these membranes and bring them to market."

While their products are not yet commercially available, Smart Separations are working with a significant investor from the air purification industry to develop their technology for market. They also have a collaboration with the University of Surrey and the International Nanotechnology Laboratory in Portugal, researching applications of their work in cancer treatment.

International exchange

Hugo's team at Smart Separations is very diverse, with employees from Portugal, Argentina, Greece, Mexico, South Africa and the UK. **Hugo is understandably very passionate about the Erasmus programme and has continued to host Erasmus students at his company.** "We have a big collaboration with the University of Surrey and they have been staying and working there as well as with us. The students we host essentially get a taste of studying in another setting but they also get experience of working in industry. They have a chance to come out of their country, out of their comfort zone and they work hard and apply themselves."

Of the three students Hugo has hosted, one has remained in the UK at Smart Separations and the others have taken their skills and experience back to their home countries.

EU funding programmes have been essential in enabling Hugo to establish a company that provides a much-needed, innovative solution to a gap in the market, taking his initial kitchen research to a fully commercial manufacturing company in the UK. Put simply: "Our company would not exist today without them," says Hugo.

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