

February 2026
Environmental Chemistry Group
Bulletin



Articles. **Rowena Fletcher-Wood** endorses CLEAPSS microscale chemistry experiments for schools. **Laura Alcock** continues her series of articles on the environmental impact of per- and polyfluoroalkyls. **Caroline Gauchotte-Lindsay** highlights the versatility of metal-organic frameworks (MOFs).

ECG Environmental Briefs. **Katherine Stanley** describes the potential of MOFs for carbon capture and storage. **Sophie Singer** explains a novel approach for mitigating the environmental impact of pharmaceuticals.

ECG Interviews. With **Pablo Campo** and **Rowena Fletcher-Wood**.

2025 ECG meetings. Two reports: **Air quality in the 21st century** and **Interdisciplinary connections to tackle the impact of tyres**.

Upcoming events. Three ECG-sponsored events: a **CREED workshop**; **#EnvChem2026: Chemistry of the Whole Environment**; and the **Royal Society of Chemistry (RSC) 2026 ECG Distinguished Guest Lecture and Symposium: Reimagining transport fuels**.

Also in this issue. **Caroline Gauchotte-Lindsay** presents her Chair's Report on ECG activities during 2025 and encourages members of the ECG to join the committee.

Contents



Cover image:
Copilot generated image of moorland fire with a city in the background.

Chair's report for 2025	3
ECG Interview: Pablo Campo	5
ECG Update Interview: Rowena Fletcher-Wood	6
Article: A Nobel prize relevant to the chemistry of the environment, <i>by</i> Caroline Gauchotte-Lindsay	7
Meeting Report: Air quality in the 21st century, <i>by</i> Laura Alcock	8
Meeting Report: Tyre particle emissions network: building interdisciplinary connections to tackle the impact of tyres, <i>by</i> James Knowles	11
Article: PFAS Series 02 – Environmental pathways and distribution, <i>by</i> Laura Alcock	12
Article: Getting the shrink on CLEAPSS, <i>by</i> Rowena Fletcher-Wood	14
Article: Invitation for Environmental Chemistry Group members to join the ECG Committee, <i>by</i> Laura Alcock and Caroline Gauchotte-Lindsay	16
ECG Environmental Brief No. 46: Metal organic framework applications in carbon capture and storage, <i>by</i> Katherine Stanley	18
ECG Environmental Brief No. 47: Two birds with one gel, <i>by</i> Sophie Singer	20
Upcoming meetings	22

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Report

Chair's report for 2025

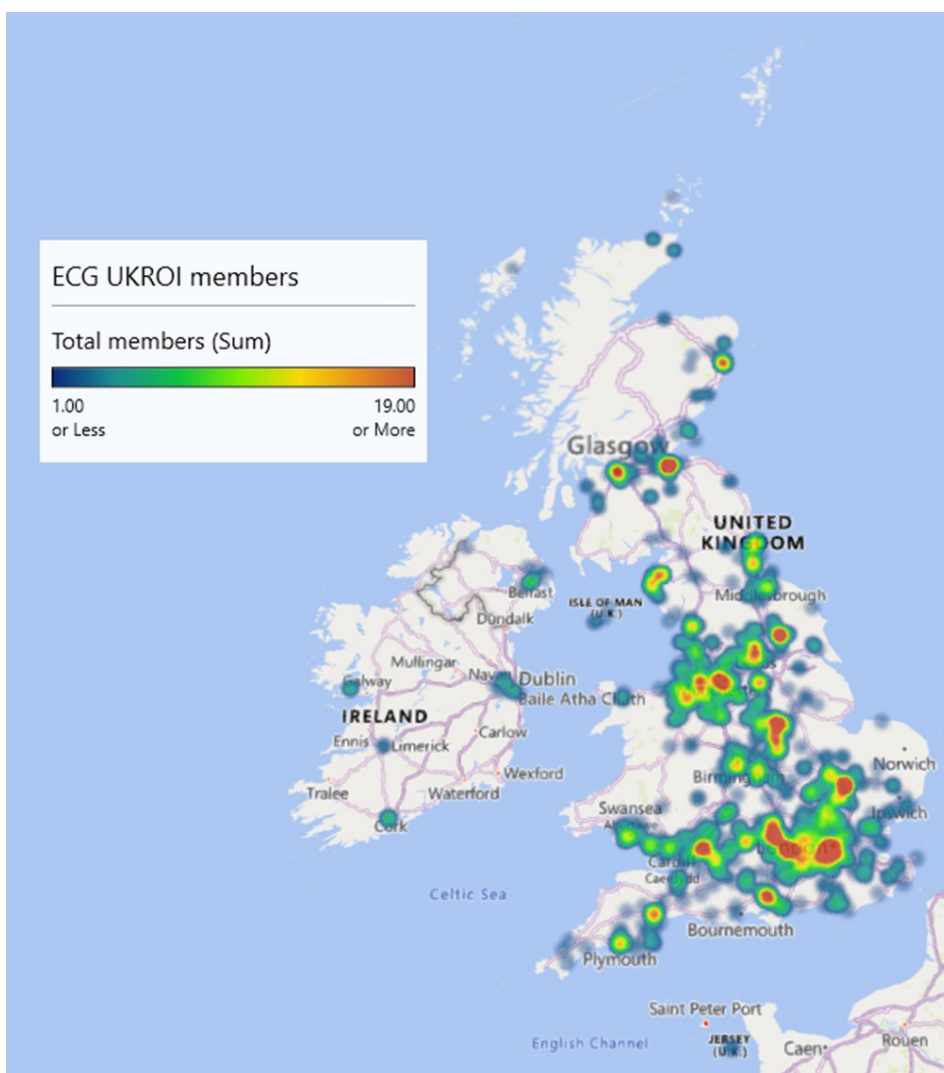
Caroline Gauchotte-Lindsay (University of Glasgow, Caroline.Gauchotte-Lindsay@glasgow.ac.uk)

On behalf of the ECG committee, I would like to open my Chair's report by sending best wishes for 2026 to all our ECG members and ECG *Bulletin* readers. We hope that you are successful in your research projects and that you will join us at some of our exciting 2026 events.

There will be more below on these events, but first I would like to take the time to look at our community. The RSC Environmental Chemistry Group is the largest interest group within the RSC's Environment, Sustainability and Energy Community, with 3,923 members – almost four times bigger than the second largest interest group. We are also one of the largest interest groups in the whole RSC. We have discovered that we have one member who is a centenarian, and we also have 106 members who are younger than 25 years. Most of our members (97.5%) chose to renew their membership to the group after one year, and five of you have been members for over 70 years. I am not certain how this works, since the Royal Society of Chemistry was formed in 1980, ([Royal Society of Chemistry - Wikipedia](#)) but I am full of admiration and gratitude, nonetheless. Our membership is well spread between career stages and sectors. We also have almost 1000 members overseas, and our UK and Republic of Ireland (ROI) members are well distributed around the British Isles. This information is really important to us to understand the community we serve and to help steer our

activities. We are looking at doing more for our undergraduate student members, but also for our retired members, and a project we have had at heart for a few years now will link both – so watch this space.

We would also love to hear from you: suggestions for meetings, events, or any other types of connections are always welcome, and you can email us at rscecg@gmail.com. More and more of you are now engaging with us through LinkedIn, so we are doing our utmost to post all relevant information there. You can follow our page at <https://www.linkedin.com/company/environmental-chemistry-group/> and join the other 567 followers.



Map of ECG membership across the UK and ROI



RSC Environmental Chemistry Group

Snipping from the homepage of rsc-ecg.com

A reminder also that our website is now rsc-ecg.com, and should soon host our hot topic ECG *Bulletin* articles. We still have envchemgroup.com, but that will close when we have been able to migrate all of our prior materials to the new site.

This year has seen some changes to the committee, and we have said our goodbyes to Dr John Collins, who was a commissioning editor for this publication and also contributed some impactful articles over the years (see ECG *Bulletin* January 2023, pp. 15-17; ECG *Bulletin* January 2024, p. 11, pp. 18-21); Dr Tomás Sherwen, who was the driving force behind our first in-person #EnvChem conference in 2022, in York; Dr Stephanie Powley, who has run our website and social media for many years; and the newly minted Dr Symiah Barnett (congratulations Symiah!), who designed and led the transition to our new website. All of them were very important and impactful contributors to the committee (well beyond the examples above), and they will be sorely missed.

In 2026, we are therefore opening committee membership with an election for five new members, and we will invite you to put yourself forward for specific roles (see pages 10 and 11).

We realise it is harder for our international members to contribute, but with two members currently based overseas we are working towards smoother integration – and potentially towards hosting satellite events in different continents.

We hosted a number of significant events this year, including most recently *Air quality in the 21st century*, held on 15 December 2025 and organised in collaboration with DEFRA's Air Quality Expert Group (AQEG), where we welcomed over 100 delegates to Burlington House.

However, I would like to use the last few words of this report to encourage you to join our two flagship events in 2026: our (rescheduled) [ECG Distinguished Guest Lecture and Symposium](#), *From Dinosaur Juice to Green Dreams: Reimagining Transport Fuels*, at Burlington House on 20th March 2026 (during which we will also hold the **ECG AGM**), and [#EnvChem2026](#), to be held at the University of Warwick on 2nd–3rd July, with a special conference dinner at Warwick Castle – not to be missed! Details of these two events are on pages 22 and 24.

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Interview

The ECG Interview: Pablo Campo

Pablo Campo (Cranfield University, P.Campo-Moreno@cranfield.ac.uk)

Pablo Campo is an environmental chemist, whose work focuses on the occurrence, transport, and fate of (organic, metal, and microplastic) contaminants in natural and engineered systems. His research involves studying the reaction mechanisms of such contaminants and identifying transformation products.

What inspired you to become a scientist?

Curiosity; how matter and energy interact, and how those interactions shape everything around us puzzled me. Over time, that curiosity grew into a passion for understanding the principles that govern our surroundings. Becoming a scientist felt like the natural path to keep asking questions, seeking evidence-based answers, and contributing to our collective understanding of how the world works.

How did you come to specialise in environmental chemistry?

I was invited for a six month placement in a civil and environmental engineering department. The job was to help with the chemical analysis in a soil remediation project. And the rest is history.

Could you describe your current job?

I'm an academic at Cranfield University's Water Science Institute focussing on water chemistry research and teaching. My work looks at how chemical processes affect water quality and better ways to detect and remove contaminants.

What advice would you give to anyone considering a career in environmental chemistry?

We need to ensure our work leads to real

solutions: better policies, cleaner technologies, and more sustainable choices that make a difference in everyday life.

What are some of the challenges facing the environmental chemistry community?

Many people don't have access to clean air or safe drinking water; and protecting nature from the impacts of human activity remains an uphill battle. We're constantly dealing with new pollutants (microplastics, PFAS, and pharmaceuticals) that find their way into our environment. On top of that, the growing effects of climate change make it even harder to understand and manage the interactions of all these chemicals.

What is the most rewarding aspect of your career so far?

Watching my students grow into confident, independent scientists. It's amazing to see them take what they've learned and use it to make a real difference whether in research, industry, or education. Knowing that the mentoring and hard work continue to have an impact long after they leave my lab is what makes this career so fulfilling.

If you weren't a scientist, what would you do?

A fiction writer. My first language is Spanish, so no pressure in trying to write the perfect novel, Cervantes already did in 1605.

And what do you do when you are not working?

I spend time with my family and walk Goyo, our maltipoo. I also enjoy books, movies and London's West End theatres.



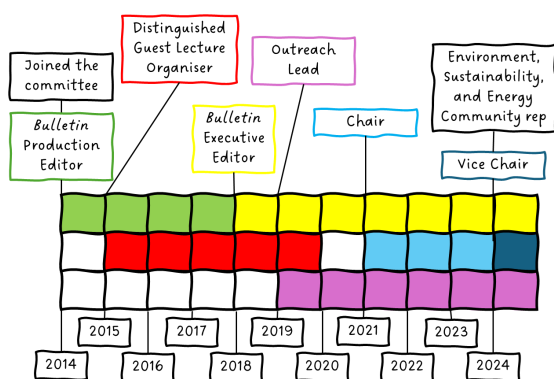
Interview

ECG Update Interview: Rowena Fletcher-Wood

Rowena Fletcher-Wood (Freelance, rowena.fletcherwood@gmail.com)

Rowena Fletcher-Wood responded to a call for expressions of interest from the RSC in 2012 and officially joined the ECG committee in March 2013. She is a freelance Science Communicator, part-time Head of Science at a tutorial college, and juggles volunteering and work with parenting three young children.

What are the main activities you contribute to within the ECG committee?



I've produced this handy infographic to show you the things I have contributed to in the ECG over time. Amongst previous roles are DGL convenor, Chair, and Outreach Lead, but currently my main contribution is as Executive Editor of the biannual ECG *Bulletin* – which you are probably reading now.

What inspired you to become a scientist?

My Year 10 Chemistry teacher. I didn't think I liked chemistry, and I wanted to study English, but two weeks into Year 10 and three chemistry lessons later, I decided I would study chemistry and see where that took me.

How did you come to specialise in environmental chemistry?

I wanted to specialise in environmental chemistry to give something back. I have always been passionate about the environment.



Could you describe your current job?

I'm not sure anyone can! I teach, lecture, run fun messy science workshops, do science writing, teach scientists to present, evaluate, and write, organise science events, and try to widen participation and access in the sciences.

What advice would you give to anyone considering a career in environmental chemistry?

Take risks. Do what you want to do, not what you feel is safe.

What are some of the challenges facing the environmental chemistry community?

Communication between different sectors is still a challenge. I may be impatient, but I think making things happen – making policies and putting progress first – needs addressing in the light of urgent, world-changing climate change.

What is the most rewarding aspect of your career so far?

I recently received a grant from the RSC Outreach Fund to deliver CSI (Crime Scene Investigation) storytelling workshops to community partners who may not otherwise be able to afford them. I am really excited to encourage scientific thinking and share my love of scientific discovery.

If you weren't a scientist, what would you do?

I would probably pursue being a full-time writer.

And what do you do when you are not working?

In the last five years, I have spent much time on maternity leave. I used some of this time to obtain my CChem qualification. As well as the ECG, I volunteer for a local Community Centre, and am a school Governor. I enjoy climbing and teaching my children to climb.

Article

A Nobel prize relevant to the chemistry of the environment

Caroline Gauchotte-Lindsay (University of Glasgow, Caroline.Gauchotte-Lindsay@glasgow.ac.uk)

The 2025 Nobel prize in Chemistry, awarded for the development of metal–organic frameworks (MOFs), highlights a class of materials whose impact spans fundamental chemistry and urgent environmental applications.

Introduction

In October 2025, the Nobel prize in Chemistry was awarded to **Omar M. Yaghi**, with **Susumu Kitagawa** and **Richard Robson**,¹ for the development of metal–organic frameworks (MOFs) – a class of crystalline, porous materials whose modular construction enables unprecedented control over structure and function. The Nobel citation highlights several applications of these materials in environmental chemistry and sustainability, including carbon capture, toxic-gas storage, catalysis, and harvesting of water from desert air.

In 2020, while serving on the RSC Environment, Sustainability and Energy Division (ESED) prize committee, I was part of the panel that awarded Prof. Yaghi the Sustainable Water Prize² for his work on atmospheric water harvesting using MOFs. This article, therefore, focuses on the chemistry underpinning atmospheric water harvesting, drawing on a comprehensive review by Yaghi's group.³ The application of MOFs for carbon capture and storage is explored in this issue (p. 18).

Reticular chemistry: design before discovery

Reticular chemistry is the concept that we can design extended structures by linking pre-designed molecular building blocks (metal nodes and organic linkers) into ordered networks.⁴ Unlike traditional porous materials, where structure is discovered, MOFs are built with topology and functionality in mind. This yields predictable pore environments that can be programmed for specific separations including water uptake.

Stability and uptake

High surface area alone does not make for a useful water harvester because water can destabilise many materials. In some MOFs, hydrolysis of the metal–linker bonds can occur. Reticular chemistry provides several strategies to address this, such as using linkers that form stronger metal–ligand

bonds or highly connected secondary building units, where dense coordination sterically shields the metal nodes from hydrolytic attack.

Step-shaped adsorption

Many water-harvesting MOFs exhibit a step-shaped adsorption isotherm, in contrast to the gradual uptake observed for classical sorbents. The origin of this is cooperative water assembly within the pore: water first binds to primary, high-affinity sites; once a critical humidity is reached, additional molecules hydrogen-bond together and to the framework, forming ordered clusters that rapidly fill the pore. This behaviour reflects chemically templated water organisation rather than simple capillary condensation. This is particularly important for water harvesting, as it enables large water uptakes and releases, using relatively small temperature gradients.

Example: monocyclic atmospheric water harvester

Monocyclic atmospheric water harvesters built around MOFs take advantage of such sorption characteristics. At night, when relative humidity rises, the MOF adsorbs water. During the day, a modest input of solar heat drives desorption. Because the MOF concentrates the water internally, the vapour released can be condensed with minimal additional energy, enabling water production in off-grid or arid settings.

Conclusion

MOF-based atmospheric water harvesters exemplify how state-of-the-art chemical design can translate directly into impactful solutions for global environmental challenges.

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Meeting Report

Air quality in the 21st century

Laura Alcock (Edwards Ltd, laura.alcock@edwardsvacuum.com)

Building on the success of last year's conference, this event, held in the RSC library, Burlington House in December 2025, provided an update of the regulation, measurement and scientific aspects of air quality. The conference was held in collaboration with DEFRA's Air Quality Expert Group (AQEG), and a number of presentations focused on this Group's recently published reports in conjunction with the UK Clean Air Programme.

Laura Alcock, Secretary of the RSC's ECG opened the conference by referencing the ECG, the primary goals of the event, and the event sponsors before she handed over to **Alastair Lewis**, professor of atmospheric chemistry at the University of York, and a member of the UK Clean Air Programme, to chair **session one**. Professor Lewis described the role of DEFRA's AQEG and the current drive to recruit new members for the Group, before giving a brief overview of the first session's format.

Eiko Nemitz (UK Centre for Ecology and Hydrology) presented *UK atmospheric ammonia sources, trends and impact*, which included a deposition profile of ammonia particulate matter and the emissions that contribute most significantly to reducing levels. The talk concluded with a summary statement that current aims to reduce emissions are not sufficient to protect biodiversity as intended and vigilance is needed for emerging sources of ammonia emissions.

Dr Sarah Moller (University of York, National Centre for Atmospheric Sciences (NCAS)) took up this point with her talk *Exploring the future: the role of ammonia in UK industry, energy and transport systems*. This summarised an AQEG workshop with representatives from multiple sectors to discuss potential issues and forecasts for the future. The lack of ammonia production and infrastructure in the UK was identified as a potential future security risk and potential applications were identified with risks and issues associated. Headline conclusions were presented with future use dependent on decarbonisation strategies being implemented.

Will the air pollution health and economic co-benefits of UK Net Zero policy help justify future action? was delivered by **Sean Beevers** (Imperial College London). This presented the method, basis data and result forecasts of a model for prediction of air quality for the UK with and without implementation of Net Zero policy. Health impact and cost-saving analyses (by most significant sectors) analyses were summarised with long-term benefits for all but some lacking in short-term cost benefits. A profile of indoor air pollution with gas and electricity cooking was compared before a summary of the forecast policy implications.

In the final talk of the first session, *Uncertainties and emerging sources of air pollution*, **Chris Dore** (Aether Ltd and AQEG member) explained that the combined complexities of activity and emission sources contribute to uncertainty of data for suitable and accurate conclusions and calculations. Methods for improving data uncertainty were assessed and discussed, and methods currently in use or in development surveyed. Emerging sources of pollution were also mentioned. The low understanding of these latter contributions results in a high uncertainty influenced, in part, by changes in policy. Concluding remarks reiterated the metric requirements for different users and the development of new methodologies and concepts.

After discussion between the presenters of this first session and delegates, sponsors were invited to give flash talks on their work based on the exhibitions displayed at the event. Lunch followed with an opportunity for networking and analysis of the themes of the nineteen conference posters:

- PM_{2.5} sources and levels, as well as significant contributors and impacts.
- Measurement and monitoring of air quality including methods, modelling and development, and the maintenance of measurement tools and equipment.
- Measurement of other pollutants and reactions, and adjustments needed to achieve this goal and to assess the potential consequences of pollution levels.

The **second session** of talks was opened and chaired by **Gary Fuller** of Imperial College London.

Roy Harrison (University of Birmingham) presented *Ultrafine particles: the new frontier in air pollution*. After clarifying the definitions of “ultrafine particles” (UFPs), their health risks were discussed highlighting that the influence of UFPs is independent of PM_{2.5} exposure. The primary and secondary sources of UFPs were described and some of the diseases linked to UFP exposure (cardiovascular and neurological (dementia) diseases) were mentioned. Mechanisms for UFP control were reviewed as well as concerns that these are linked to the presence of other pollutants whose concentrations are being reduced.

Chemical composition and toxicology of ultrafine shipping PM was the subject discussed by **Nat Easton** (University of Southampton), highlighting that shipping emissions are among the least regulated sources of pollution, globally. Coarse, fine and ultrafine particle emissions were simultaneously sampled at various sites of Southampton port, measured by ICP-MS and compared with a non-port urban background site. The study found that cruise shipping contributed much more significantly to emissions than cargo shipping. Primary health impacts were investigated based on the emission composition, which indicated that a pro-inflammation response was noticeable, and antiviral gene responses were suppressed, resulting in a virally-susceptible state.

The first keynote talk of the day was delivered by **Rosie McEachan** (Bradford Institute for Health Research): *Pollution, place, people and politics: Lessons learnt from 15 years of evidence and action to reduce pollution in Bradford*. Implications of health challenges and life expectancy related to local pollution were highlighted at the beginning of the talk, including the statement that children living just 10 miles apart had a 10-year gap in life expectancy with poorer families experiencing the lower life expectancy. Distribution of pollution factors across geographic, ethnic and wealth backgrounds showed that primary sources overlapped noticeably with each other and those of poorer backgrounds and ethnic minorities. Difficulties around influencing policies caused by political appearance were highlighted, as well as angles applied to communication of scientific

information statements by public media and the need to drive for positive measures and persist in order to actually see the desired benefits.

At this point, the conference took another pause in order to network and look at the posters before returning for the final session which was chaired by **Valerio Ferracci**, Environmental Chemistry Group.

Ruth Doherty (University of Edinburgh) spoke on *Implications of climate change for achieving WHO Air Quality Guidelines across Europe: Key processes and uncertainties*, and discussed street-scale temperature change project modelling based on existing continental models, as well as potential impacts on air pollution at a level that affects individuals. An overview of the forecast emissions and the chemistry driving the changes in pollutant concentrations in the atmosphere was presented. Summer and winter profiles were modelled, demonstrating the consideration of the different air quality profiles related to seasonal conditions. The modelling and differential charts were based on 2090s compared with 2000s data. Current guidelines were shown alongside future guidelines with ozone increasing – this related to its control by other pollutants which show reduced concentration limits in the guidelines.

Assessing the air quality impact of the London-wide Ultra Low Emission Zone (ULEZ) was presented by **Yvonne Brown** (Transport for London). The history of London emissions charges and zones, as well as the current rules was introduced before reviewing the level of compliant vehicles (those not subject to charges) and the emissions trends with clear reductions attributable to COVID-19 and the implementation of ULEZ, as well as a noticeable rebound of emissions following movement restriction easing at the end of the global pandemic. An estimation of potential emissions without ULEZ implementation was shared, as well as the method used to calculate it. The team took care to consider nationwide and global action for reducing emissions when modelling this, rather than assuming no change. The challenges of working on this were shared, including a statement of the threats and abuse that the team faced as a result of the analysis and conclusions shared. However, the work proved that the implementation had had a significant impact on emissions and air quality in London.

Maria Val Martin (University of Sheffield) discussed *Air quality impacts of wildfires and prescribed burns in the UK uplands*. The similarities and differences between the two types of burns were highlighted. The UK's largest wildfire and its impacts were summarised, as well as the impact of controlled burns for moor management which result in increased levels of PM_{2.5} in the atmosphere in surrounding cities to above WHO limits. The study presented focused on the Peak District due to occurrence of both wildfires and controlled burns within its boundaries. Efforts to deploy air quality sensors in the affected areas were discussed and projects behind the efforts.

Finally, **Eloise Marais** remotely delivered the second keynote talk of the event on *Inequitable exposures and health burdens of air pollution from the major oil and gas lifecycle stages in the United States*. This talk started with an overview of the key contributors to natural gas contribution, the major stages of the oil and gas lifecycle and the pollution from each of these stages. The reasons for this study were presented, including the gaps present in

the information from historic studies. Data selected were from 2017 as this was the most recent significantly comprehensive global dataset. The contribution of oil and gas to specific pollutant emissions were determined and shared. A model of pollutant concentrations was created for each stage of the lifecycle, including a baseline. From this model, an estimate of the geographic health burden was formed – the input information for this was also summarised. Among the key points discussed were the facts that some of the poorest areas of the US were subject to the majority of downstream stage pollution, and ethnic minorities, including Native Americans, experienced higher rates of health burdens. Concluding remarks shared the limitations of the data and the conclusions of the study.

Gary Fuller addressed the delegates with concluding remarks, summarising the passionate presentations and participations of the delegates. The sponsors were thanked and this highly successful event was closed with sentiments of intention to repeat it next year.



Speakers, presenters and delegates at the Air Quality in the 21st Century conference photographed in the Library of the Royal Society of Chemistry on 15th December 2025.

Meeting Report

Tyre particulate emissions network: building interdisciplinary connections to tackle the impacts of tyres

James Knowles (Loughborough University, j.a.c.knowles@lboro.ac.uk)

Despite the shift away from internal combustion engines, transport will continue to emit particulate matter (PM), with tyre wear identified as a major contributor. Significant gaps remain in understanding how tyre particles are generated and dispersed, and their effect on human health. The Tyre Particulate Emissions (TyPE) network, funded by the Engineering and Physical Sciences Research Council (EPSRC), brings together researchers, industry, and public bodies to address these gaps.

boundaries and provide a platform that can be used to address these research gaps through the development of collaborative research projects and proposals.

The first network event was held in September 2025 at Loughborough University and attended by researchers working in a range of disciplines from engineering through to microbiology. Over the course of the day, attendees engaged with seminars, networking activities – including sharing and collating currently unanswered questions about tyre emissions – and informal discussions over coffee and meal breaks. TyPE will continue to run a series of network events to:

- enable members to meet other people working on tyre emissions research;
- learn about discipline-specific research challenges through a series of workshops;
- contribute to the development of a white paper and a roadmap that will outline future research needs to help minimise the impacts of tyres on people and places.

The network are actively looking for members with expertise related to tyre emissions, and we would like to encourage any interested readers to get in touch either via the network e-mail (type-network@mailbox.lboro.ac.uk) or through the Project Lead, Dr James Knowles. (j.a.c.knowles@lboro.ac.uk).

Reference

1. Zhang, M., Yin, H., Tan, J. et al, A comprehensive review of tyre wear particles: Formation, measurements, properties, and influencing factors, *Atmospheric Environment*, 2023, **297**, 119597; <https://doi.org/10.1016/j.atmosenv.2023.119597>



Transport will continue to produce particulate matter (PM) even as internal combustion systems are phased out, with research identifying that at least half of airborne PM emissions originate from non-engine sources in current low-emission-zone-compliant cars.¹

Tyres are a key contributing source of PM, yet there are significant knowledge gaps surrounding the science of tyre particulate matter generation, environmental transmission and health impact. The TyPE network, funded by the EPSRC, has been established to help address these knowledge gaps. By bringing together researchers in academia and industry with representatives from public bodies, the network aims to identify the research needs both within and across existing research discipline

Article—PFAS Series 02

Per- and polyfluoroalkyl substances: environmental pathways and distribution

Laura Alcock (Edwards Ltd, laura.alcock@edwardsvacuum.com)

Since the accidental invention of per- and poly-fluoroalkyl substances (PFAS) in 1938,¹ thousands of different chemicals now exist within this class of “forever chemicals” which are used for industrial, as well as consumer applications. This series will review environmental and human health impacts of PFAS. This article examines environmental exposure pathways and distribution observations.

Uses of PFAS include firefighting foams – particularly for especially high-risk environments; fireproofing and fire-retardant treatments; non-stick coatings for cookware; waterproofing treatments; food packaging; and surfactants.^{2,3} Their thermal and chemical stability, as well as their ability to reduce surface tension, make them excellent materials for all of these applications with very high performance against the desired criteria. However, these properties also result in PFAS bioaccumulation, environmental persistence and resistance to most water treatment methods.²

Because they withstand most water treatment methods, PFAS have been dubbed “forever chemicals” and their distribution throughout the environment has been the subject of significant research.

Environmental exposure pathways

The exposure pathways for PFAS to enter the environment depend on the PFAS material itself, the manufacturer and the application for which it is used. Chemical manufacturing presents a significant source of PFAS into wastewater, through appropriate drainage, to wastewater treatment plants (WWTPs). Some materials have historically been disposed of directly to landfill and this practice is still operating, depending on local regulations. Dumping, whether within or outside local regulations can take place, introducing PFAS materials to surface waters and emissions. These emissions may or may not be managed for their chemical composition, and can introduce PFAS into the air.

After manufacturing, PFAS material products can then be used to manufacture firefighting materials, including aqueous film-forming foams². These foams are uniquely suitable for suppression of liquid hydrocarbon fires and fires with high-risk chemical factors. Unfortunately, due to the nature of the application, containment is a low priority when using these foams. As a result, the PFAS materials are able to enter the surrounding soils, groundwater and surface waters.

PFAS products are also added to many consumer products, including clothing, furnishings, cookware, electronics and cosmetics. With little awareness of the presence and significance of these materials within the products; as well as a lack of access to suitable disposal methods, the significant majority of these materials will be disposed of through landfill. Cosmetics and many cleaning products will be removed through bathing and washing, entering drainage and WWTPs. Washing cookware between uses will add to this exposure. Use of furnishings, clothing and electronics will abrade microscopic particles of PFAS materials, also releasing them into the air.

Environmental exposure pathways

Sewage sludge distribution of PFAS

Zhou *et al.* (2024)³ investigated concentrations of PFAS in sewage sludge from 16 countries throughout the world. WWTPs contain PFAS from industrial and domestic discharges, as well as those formed *in situ* from PFAS precursors by microorganism and enzymatic action. Highly hydrophobic PFAS have greater protein affinity and, as a result, show greater adsorption on sewage sludge matrices during biological treatment of wastewater. Sewage sludge is typically incinerated, landfilled or used for agriculture – all of which transfer PFAS to the environment, meaning that the content of PFAS is of particular interest.

Significant differences were noted in the concentrations and composition of PFAS content in sewage sludge between continents. Overall, the highest concentrations of PFAS were observed in sewage sludge from Switzerland, then Thailand, and the lowest concentrations in Nigeria – this was

attributed to the relative industry and economic levels of the countries. Irrespective of continent, highly urban and industrial areas consistently demonstrated higher concentrations of PFAS materials in sewage sludge with PFOS and PFOA being the primary components in most. The highest variation of concentrations was typically observed in Asia (eight out of 12 PFAS investigated), half of which were most variable in Thailand.

As identified, the primary sources of PFAS in the environment are the production, use, and incorrect disposal of the materials, which typically occur inland.⁴ Discharge into rivers and other waterways carries PFAS materials into the ocean, PFAS pesticides being discovered in estuaries on the Atlantic Ocean. More volatile PFAS compounds are able to enter the atmosphere to be carried by air currents. Whilst there has been no exhaustive study into the global distribution of PFAS into the natural environment, some investigations have indicated the potential extent thereof.

PFAS distribution through air and water currents, as well as the water cycle, seem to have been influenced by climate change. Due to increased freeze-thaw action, permafrost is potentially becoming a sink for airborne PFAS, with higher concentrations of the more soluble and environmentally persistent short-chain PFAS compounds in the deeper parts than the long-chain compounds. This is concerning, as this places these compounds in close proximity to groundwater at higher concentrations.⁴

An analysis of snow and meltwater from Mount Everest revealed that PFAS was present at all levels of the mountain sampled, including the Balcony, which is just below the mountain's peak. PFOS (perfluorooctane sulfonate), PFOA (perfluorooctanoic acid) and PFHxA (perfluorohexanoic acid) were found in all samples.⁴ PFAS have also been detected in Arctic ice and soil samples, demonstrating a comprehensive distribution throughout the global environment. Sediments in the Arctic circle have

demonstrated behaviour as a reservoir for PFAS,⁴ accumulating higher concentrations of the material than the water.

PFAS in air is unavoidable. PFAS in water is transmitted through irrigation, consumption, and the water cycle. Water is also ingested and taken up by plants. Contaminated plants can then be ingested, contaminating animal tissues and products (e.g. eggs and milk). Where ingestion occurs, so does excretion, acting as another mechanism for redistribution of PFAS in the environment.

PFAS have also been detected in Arctic ice and soil samples, demonstrating a comprehensive distribution...

Anywhere and everywhere

With PFAS being found in Arctic ice and soil samples and in the snow on some of the highest parts of Mount Everest, it is not unreasonable to summarise that the materials have spread to cover the globe. With recent updates to the definition of PFAS, the term now includes over 15,000 different chemicals, all of which pose a significant environmental risk.

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Article

“Getting the shrink on CLEAPSS”: Microscale chemistry and sustainable science for schools

Rowena Fletcher-Wood, Freelance Science Communicator
(rowena.fletcherwood@gmail.com)

CLEAPSS (Consortium of Local Educational Authorities for the Provision of Science Services) is an advisory Health and Safety service that supports practical work in science, D&T, and art in UK schools. Recently, CLEAPSS have been getting smaller – developing a strand of practicals called “Microscale Chemistry”, which endeavour to make chemistry experiments more accessible and environmentally friendly.

Within the CLEAPSS remit falls training, testing the safety limits of practicals, providing advice, model risk assessments, and resources such as videos of experiments. It's a membership service, and members are bound by CLEAPSS risk assessments just as they would usually be bound to follow employers' risk assessments.

Microscale experiments are automatically safer – the volumes used are measured in drops not millilitres, there's less chance of getting a liquid in your eye, and the principle “the dose makes the poison” truly does apply.

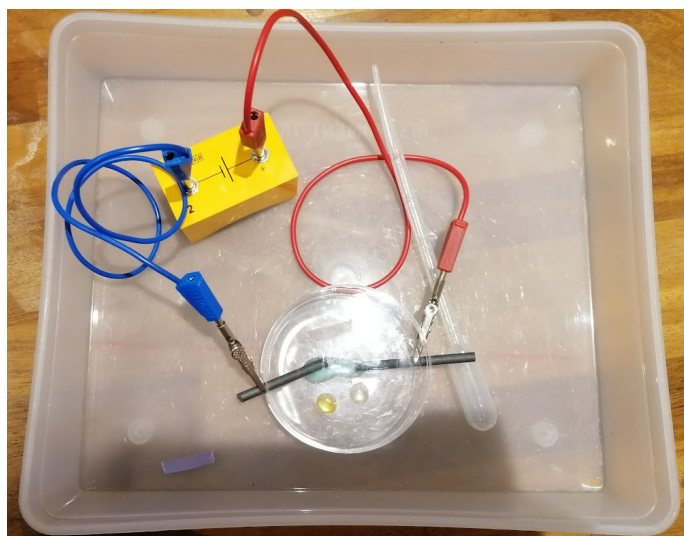


Pipetting experiment preparation

Joining CLEAPSS simply devolves that responsibility. It doesn't mean you can't do practicals they don't have a risk assessment for, but it does mean that deviating from them has to be justified – and, usually, even safer.

The recent development of a suite of microscale chemistry reactions has been driven by the shrinking deployment of practical science in schools. More often, UK schools are deciding it just isn't worth the budget, so students are missing out on valuable hands-on skills which let them use their brain in different ways, hone fine motor skills, and get a glimpse into discovery.

But it isn't just about budget. The other justifications are safety and sustainability – which is where our Environmental Chemistry Group becomes interested. Microscale experiments are automatically safer – the volumes used are measured in drops not millilitres, there's less chance of getting a liquid in your eye, and the principle “the dose makes the poison” truly does apply.



Microelectrolysis

The same remains true for environmental toxins washed down the drain from dirty glassware, or sent to landfill waste via tissues – there's a lot less of it, so the environmental impact is lower too.

From an energy perspective, smaller experiments are also better for the environment. If smaller amounts of chemicals are used, smaller amounts need to be made, harvested, converted and transported. Everything translates into savings. But does it give students the same experience?

It certainly gives them a different one. Microscale experiments include microelectrolysis, pipette titration, electrode potentials using drops, dropping-tile acid-base and redox tests, hydrogen reduction in a syringe, gas diffusion in a petri dish, cracking in a Pasteur pipette, and a mini Hofmann voltameter.



Pipetting titration dropping tile.

I have tried out some of the dropping experiments – both using CLEAPSS laminated sheets with circles drawn on them (I was too enthusiastic with the dropping pipettes, and some of my solutions escaped the neatly drawn lines and merged together) and using dropping tiles from the

practical lab at my school. The latter worked much better, and I was able to adapt A Level examination (age 18) practicals for the JCQ (Joint Council for Qualifications) endorsement to micro scale every test that didn't involve heating. Whilst

I thought the halogen tests might not show up clearly against the white dropping tile background, I was wrong. In fact, the colour change was much clearer than in a test tube, and all the students were able to distinguish iodide, bromide, and the two chloride salts.

I also set up microelectrolysis following the CLEAPSS guidelines. I quite enjoyed this as it uses litmus papers trapped in a plastic petri dish to show what gas is given off and doesn't involve poisoning students with chlorine gas (like when I did that experiment during my school days). The tricky parts were cutting the petri dish to stick the electrodes in without completely smashing it, shortening the electrodes (we had some broken ones already) and using polystyrene blocks to support the electrodes, but the experiment itself worked well. It offers students the chance to run their own experiment rather than working with a partner, and really hone their skills in patience!

Overall, I believe making all school chemistry microscale would mean missing out on skills and understanding of lab-scale experiments, but it definitely has its place. A combination of microscale and true-sized chemistry experiments allows teachers and tutors to minimise the most harmful chemicals whilst still teaching those experiments and introduce a broader curriculum of hands-on science.

Microscale Chemistry was developed by Bob Worley BSc, MSc, FRSC Chemistry Adviser, CLEAPSS, Brunel Science Park, Kingston Lane Uxbridge, UB8 3PH, UK; www.cleapss.org.uk, science@cleapss.org.uk.

Website: [Microscale chemistry practicals I RSC Education](http://Microscale%20chemistry%20practicals%20I%20RSC%20Education)

Article

Invitation for RSC Environmental Chemistry Group members to join the ECG Committee

Laura Alcock, Edwards Ltd (laura.alcock@edwardsvacuum.com) and Caroline Gauchotte-Lindsay, University of Glasgow (caroline.gauchotte-lindsay@glasgow.ac.uk)

The Environmental Chemistry Group (ECG) is the largest of the Royal Society of Chemistry's interest groups. The Committee publishes the semi-annual *ECG Bulletin*, and coordinates numerous events throughout the year, including our two flagship events; the **DGL (Distinguished Guest Lecture)** and **#EnvChem (Chemistry of the Whole Environment)**. In March 2026, we will host a vote for **five** people to join the Committee. Here, we share more details of the roles that need to be filled and the reasons for joining.

Reasons to join the ECG Committee

The Environmental Chemistry Group is one of the longest-established interest groups of the Royal Society of Chemistry and has the largest membership. Becoming a Committee member offers an opportunity to support our community by organising relevant meetings, writing or commissioning articles on important and emerging topics, and helping to shape and deliver outreach activities.

Committee members act as a bridge between the membership and the RSC. They are in a unique position to ensure that the ECG addresses the issues that matter most to our community, while also helping members understand and contribute to the broader work of the RSC – particularly its policy activities.

This is why we value a diverse committee: to ensure our decision-making truly reflects the breadth of our membership and continues to inform our strategy. Learn more about our commitment here: <https://www.rsc-ecg.com/post/just-transition-strategy-ecg-s-commitment>

Committee role vacancies

1. ECG *Bulletin* Commissioning/ Executive Editor

Our biannual *ECG Bulletin* involves the ECG Committee as writers, content editors, and proof-readers. However, key Committee members take on the greater responsibility of sourcing content

and coordinating committee efforts to prepare the final publication. Long-time Executive Editor of the *ECG Bulletin*, Dr Rowena Fletcher-Wood would like to hand this torch to another bearer and, so, we are looking for a new Committee member who would like to take on this task. Rowena will remain available to coordinate a smooth handover.

The Executive Editor's primary responsibilities are to ensure that all articles are formatted within the template, edited to expected scientific standards and style guidelines, and proofread. In addition, images sometimes need to be sourced and their licensing checked. Finally, the Executive Editor shares all the articles with the publishing editor in time for preparation of the final *Bulletin* that goes to print. The Executive Editor orders the print, chooses the number of copies and receives them, ensuring that authors and Committee members receive hard copies, as desired.

2. Flagship Event Coordination Lead

The annual ECG DGL and #EnvChem events require a greater level of coordination than other ECG calendar events. The Committee is looking for two dedicated Lead Convenors to effectively project-manage the organisation of these events. There are resources detailing the primary tasks associated with the events to facilitate this role.

Primary duties will be to schedule event coordination meetings with other volunteers, drive prompt speaker selection, assign tasks, and chase completion. The most critical tasks associated with these events are releasing communications promptly to ensure a good sign-up. Coordination can be remote, but in-person attendance is preferred.

3. ECG Website Manager

Whilst the RSC maintains the ECG Interest Group page, the ECG also organise and maintain our own website (<https://www.rsc-ecg.com>) and we need a volunteer to take on this task.

Managing the ECG website requires uploading final *Bulletin* .pdf files for members to download twice yearly, uploading articles and event materials, updating the events calendar and general website maintenance. The Website Manager would also obtain and report on website traffic at Committee Meetings (four times a year).

4. STEM Outreach Lead

There are several STEM Outreach events held annually, throughout the UK. The ECG are looking for a volunteer to coordinate ECG representation at some of these events and report on the interest received. This role may be split between two individuals, in different locations. Primary activities are coordinating Committee participation in STEM Outreach events such as science festivals and fairs, maintaining demonstration equipment and writing event reports for the biannual *Bulletin*.

5. International Representatives

Since February 2023, Sebastian Diez of the ECG Committee has been based in Santiago, Chile and, since October 2024, Laura Alcock, the ECG Secretary, has been based in Qingdao, China. This has given the ECG Committee new perspectives on environmental chemistry and we would like to expand further.

We are particularly interested in receiving applications from interest group members based overseas. We are aware that time zone differences can cause a challenge, but it is one that we feel we can overcome. The new perspectives and knowledge that international members bring are invaluable, and we look forward to learning from them.

General Committee Duties

The Committee meet four times per year. At least one meeting per year will be linked to a flagship event (DGL or #EnvChem) to support volunteer attendance at these events. At least one meeting per year will be entirely online and other meetings will be coordinated based on the ECG calendar and Committee member requirements. All Committee meetings will have the option to attend online for volunteers who are unable to attend in-person.

Committee members are asked to complete a self-interview for an ECG *Bulletin* edition and support editing and proofreading of the *Bulletin*. All Committee members will be asked to support coordination of events, including but not limited to, the flagship DGL and #EnvChem events, and share information about all ECG events to professional networks.

As much as possible, Committee members are encouraged to make the effort to attend events other than those that they have coordinated, where they support with tasks such as delegate registration and reporting for the *Bulletin*. Expenses are paid for these attendances. Suggestions for speakers applicable to any event are requested, where appropriate/able; and the Distinguished Guest Lecturer for the DGL event is selected by the Committee, based on the coordinating team's suggestions.

Website: [Home | Environmental Chemistry Group \(RSC ECG\)](#)



A collage of the current RSC ECG Committee members (January 2026)

ECG Environmental Brief No. 46

ECGEB No. 46

Metal–organic framework applications in carbon capture and storage

Katherine Stanley (Greene's College Oxford, katherine.stanley@my.greenes.org.uk)

Celebrated by the award of the 2025 Nobel prize for chemistry, the structural flexibility of metal–organic frameworks (MOFs) and their myriad applications offer a promising class of materials for environmental remediation and, in particular, carbon capture.

Introduction

Metal–organic frameworks (MOFs) are porous materials with very high internal surface areas, made from metal ions or ion clusters and organic ligands arranged in a crystalline framework (**Figure 1**), which allows for huge variation and easy modification of the combination of metal ions, organic ligands and functional groups. This, combined with extremely high porosity, means that MOFs have potential applications across a range of fields, from gas storage and separation to biomedical imaging. Their functionality as a medium for gas storage and separation make MOFs particularly promising for applications in carbon capture and storage (CCS).¹

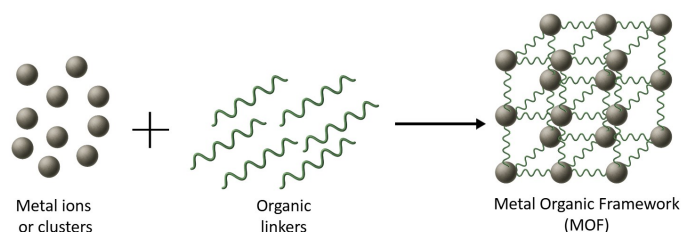


Figure 1. Metal organic framework structure.

CCS is increasingly considered essential to combating climate change and achieving net zero because of its potential to remove emissions from the atmosphere. In industry, CCS is pivotal to existing methods for reducing emissions, including post-combustion carbon scrubbing, which is predominant in heavy industry and power plants due to established successes and retrofitability.¹ Consequently, research into new methodologies and improved materials and their practical applications for CCS has huge significance to developments in clean energy.

MOF applications and CCS limitations

CCS is the main method of reducing carbon dioxide emissions from large industrial sources. Current

methods are well established, commonly using zeolites as adsorbents in flue gas separation and direct air capture, and research into optimisation of industrial CO₂ removal is ongoing.

However, on a laboratory scale, MOFs have several advantages over conventional zeolite adsorbents. The greatest advantage of MOFs lies in their structural modularity, allowing the accurate crystal design that considers structural and geometrical needs, with pore size and shape easily tailored to the specific properties and dimensions of target molecules.² MOFs exhibit high internal surface areas (greater in some cases than even the most porous zeolites)², making them ideal adsorbent materials: they consistently demonstrate higher carbon capacities and uptake values² and can be adjusted according to the specific conditions of any industrial application.

MOFs can be further improved by several strategies which show increases in carbon uptake and stability of frameworks. Target modification of metal centres to form open metal sites (OMSs) is one such strategy. In Mg-MOF-74^{2,3} (which demonstrated the highest reported CO₂ adsorption capacity (9.9 mmol g⁻¹) of Mg-MOF-74 analogues at the time of its initial synthesis) solvent molecules co-ordinated at every sixth position of octahedral metal centres were removed to create OMSs which utilise Lewis acidity to interact more strongly and selectively with CO₂ molecules (O=C=O...Mⁿ⁺). When the Mg-O bond length is decreased, CO₂ uptake of Mg-MOF-74 is increased, so the high affinity for CO₂ in Mg-MOF-74 seems to result from strong ionic character in the Mg-O bond, which creates stronger charge interactions between OMS and CO₂ molecules.²

One serious challenge which MOFs face is competitive adsorption of H₂O with CO₂. MOF-74 and others display lower CO₂ capacities under humid conditions, and prolonged exposure to water can also have an adverse effect on the chemical stability of the MOF, eventually breaking the framework via hydrolysis. Thus, it poses a significant challenge to both the efficiency of MOFs for CCS and their regenerative ability to endure the thousands of cycles practically necessary for industrial application. The two most effective

methods of improving water resistance are the synthesis of hybrid ultra-porous materials² (HUMs), and amine substitution.⁴ In HUMs syntheses, potential OMSs are used as co-ordination sites for anionic species. These hybrid ultra-porous materials show high CO₂ capture capacity and selectivity in direct air capture conditions, although the volume of H₂O molecules in the air is much greater than that of CO₂, yet long-term exposure to water vapour still showed significant decrease in CO₂ uptake capacities. Adjusting the metal and ligands has continued to improve hydrophobicity. Comparing the use of Ni(II) with (NbOF₅)²⁻ to an earlier study using SiF₆-3-Cu showed that the more strongly binding anion and better nucleophilic characteristics contributed to improved tolerance against water vapour, with a carbon capture capacity 15% higher than that of SiF₆-3-Cu.² This system outperformed all others at the time in direct air capture and flue gas applications.²

Alternatively, the use of amine substitution⁴ might offer a solution to the adverse effects of water. Uncoordinated amino groups on organic linkers act as active polar binding sites for CO₂, increasing affinity in the pore framework. CO₂ molecules bond to alkylamine sites in preference to OMSs under humid conditions, as OMSs are virtually inaccessible due to bonding with water. *N*-containing ligands can also have the same polarising effect and have the added advantage of being adaptable by controlling the orientation of ligands to customise molecular cavities to trap the target molecule. Although this reduces H₂O/CO₂ competition, *N*-containing ligands are still prone to water effects and eventual structural degradation.

Despite the potential advantages of MOFs, there are limitations to their practical use. Chief among these is the influence of water on the adsorption mechanism and long-term chemical stability of the MOF, especially important for their application of in direct air capture. Beyond this fundamental hindrance, the practicalities of scaling up MOF synthesis to an industrial level are still problematic, with research only beginning to progress to this stage. Further research into the MOF performance under low CO₂ concentrations and real industrial conditions is a priority, along with development of the correct morphology for industrial use (powder forms are unsuitable under real-world conditions). Moreover, MOFs are not currently economically viable, largely due to high solvent costs required in the synthesis stages and, so they remain a poor

replacement for cheaper zeolite adsorbents. Additionally, metal organic frameworks are not the only promising new CCS technology. Amine-based adsorbents are also receiving significant research investment, given their relatively cheap operating costs, strong performance even at low CO₂ partial pressure equivalent to air,² and other advantages over their physico-sorbent counterparts (such as MOFs), including lower regeneration energy penalty and higher moisture tolerance. Amine-based adsorbents still have challenges to overcome. To scale these up, operational and adsorbent costs must also be significantly reduced. Deactivation by acid-gas pollutants, and stability and adsorption potential under harsh conditions present a further challenge, but solutions exist: amine-based adsorbents may hold equal promise, and new methodologies demonstrating the potential of unsupported polyamine-based adsorbents are emerging.⁴

Conclusion

Despite the significant promise MOFs hold for efficient carbon capture, customisable to specific industrial environments, they still face considerable limitations and competition in gas storage and separation.⁵

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Two birds with one gel

Sophie Singer (University of Glasgow, s.singer.1@research.gla.ac.uk)

Pharmaceuticals continually enter the environment, lingering as pollutants that endanger ecosystems and public health. Self-assembling gels provide a novel solution to capture and recycle these contaminants, with active ingredients themselves holding the potential to become self-remediating.

Introduction

Active pharmaceutical ingredients (APIs) are continuously introduced into the environment. Due to a significant number of documented studies, it is now widely recognised that APIs can have catastrophic effects on wildlife, ecosystems, and public health. Fish are particularly susceptible to the uptake of pharmaceuticals because of their physiology, and lower metabolic capacity for xenobiotics compared with mammals. One crucial global threat is antimicrobial resistance (AMR). Additionally to antibiotics, the proliferation of AMR can be enhanced by antivirals, antifungals and antiparasitics of all kinds. Overuse of APIs, non-specific prescriptions, and improper disposal are all contributors and compounding to these threats. These matters are co-occurring amongst a smorgasbord of other environmental issues, with no single solution to fit them all. While all approaches to solving these various problems should be addressed, a truly sustainable solution points to greener manufacturing. As the important principle of green chemistry outlines 'Benign by Design'.¹ This brief will discuss reasons why 'Smart by Design' could be complimentary to this motto.

Fate of APIs

APIs enter the environment through various routes: manufacturing, agriculture, topical use, medical waste, incorrect disposal, and excretion following veterinary and human ingestion. Once ingested, a significant portion of an API's parent compound can be excreted completely unchanged, while the remaining portion is excreted in metabolised forms that may still be active and, in some cases, more potent or recalcitrant than the parent compound.² Their effects can be additive or synergistic.

Advanced wastewater treatments release trace residues, and with the constant influx of pharmaceuticals, even rapidly degrading compounds can become pseudo-persistent, entering ecosystems faster than their rate of elimination. This persistence can lead to their eventual uptake by organisms, resulting in bioaccumulation and biomagnification throughout the food chain. While pharmaceuticals are often improperly disposed of, flushed, or incinerated, the circular economy concept is gaining momentum, particularly in promoting the recycling of unused, expired, or unwanted drugs and the redesign of pharmaceutical lifecycles.

Supramolecular gels

Supramolecular gels, self-assembled from low-molecular-weight gelators (LMWGs) are colloidal soft solids. They consist of two phases, a solid-phase network spanning a liquid-phase solvent. The solid phase arises from the hierarchical self-assembly by non-covalent interactions between the gelator molecules into nano-architectures that entangle to form a 3D network, encapsulating the liquid phase to create the gel. These gels are dubbed 'smart' because they can be designed to have specific properties, can respond to a range of stimuli in a spatio-temporal manner, and in this case, they can be molecularly fine-tuned to interact with contaminants. Gelation can be initiated by altering the solubility state of the gelators. Triggers include pH (**Figure 1**), electrochemicals, anti-solvent, temperature, metal/salt, enzyme, and light. The trigger can also be used to easily and rapidly disassemble the gels back to their free molecules. The gelation of the same LMWG can sometimes be triggered by applying different trigger methods, leading to gels with distinct final properties. Peptide-based LMWGs have shown promise towards water remediation of heavy metals, dyes, oil spills, heavy metals, toxic anions, and chemical weapons.³ There is limited work on LMWGs towards pharmaceutical clean up, with some studies on carbamazepine, ciprofloxacin, diclofenac, and nalidixic acid sodium salt. Results, achieved through pH switching or encapsulation^{4,5}

are varied, with some APIs removed effectively and others less so. Current methods face challenges in designing a gelator that can selectively interact with a wide variety of APIs.

Additionally, designing APIs to retain efficacy while gaining gelation capabilities could help reduce production, waste, and costs, and contribute to diverting from a linear approach to a circular one.

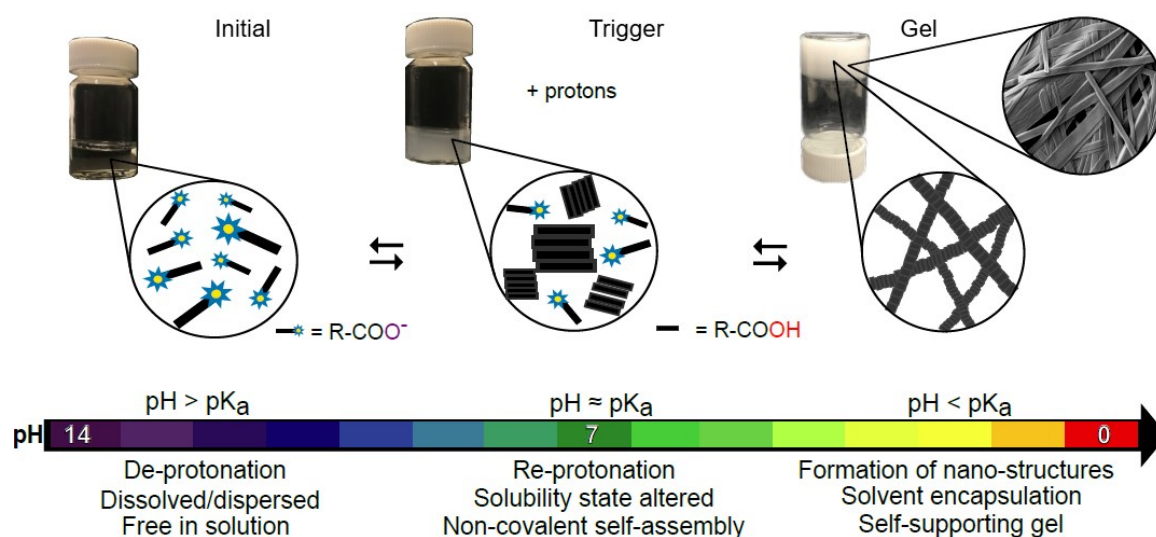


Figure 1. Formation of a gel with a LMWG through a pH trigger.

APIs as gelators

There is no comprehensive method to determine if a compound will be capable of forming a gel (rather than precipitating or crystallising) – under what conditions or its resulting gel properties. Some progress has been made in predicting gelation capabilities of peptides using computational approaches. The synthon approach is commonly used, where pre-existing gelators are tailored in established ways to achieve specific interactions. However, novel gelators are typically discovered serendipitously and rationalised based on their chemical properties. Despite their structural diversity, gelators share common features such as amphiphilicity, aromatic groups, hydrogen-bonding functionalities (e.g. hydroxyl, amine, and carbonyl), ionisable groups (e.g. carboxylic acids), and chirality which supports directional anisotropic growth. Many high-value, and environmentally significant APIs fit this description. It is a fascinating prospect that APIs themselves could act as LMWGs, enabling their self-remediation and reuse. This approach could lead to the creation of ‘envirogels’ or ‘urinogels’ from matrices such as wastewater or urine. By finding a method of concentrating these samples to the critical gelation concentration and applying appropriate triggers, pharmaceutical gelators might be harnessed to form gels that aid their own removal and recycling.

Conclusion

Various interventions can help mitigate the environmental impacts of APIs, with particular emphasis on creating pharmaceuticals that are ‘Benign by Design’, to degrade at a reasonable rate. However, this is not always achievable. By adopting a ‘Smart by Design’ approach and exploring innovative pathways, such as utilising APIs as gelators for their recovery and recycling, removing APIs from wastewater can contribute to reducing antimicrobial resistance, protecting aquatic ecosystems, and advancing the principles of the circular economy.

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Upcoming Meeting

From dinosaur juice to green dreams: reimagining transport fuels

The 2026 ECG Distinguished Guest Lecture and Symposium: ‘exploring the future of transport fuels’.

Where: The Royal Society of Chemistry, Burlington House, London, W1J 0BA

When: 20th March 2026 12:00-17:30

This one-day ECG DGL and Symposium, organised by the RSC Environmental Chemistry Group, is one of our annual flagship events and focuses on a specific contemporary environmental chemistry topic. The 2026 event (rescheduled from last year) explores the future of fuels from fossil fuels to “green” alternatives.

Confirmed speakers

Professor Mercedes Maroto-Valer (Heriot Watt University)

Leader of UK Industrial Decarbonisation Research and Innovation Centre, as well as Deputy Principal of Global Sustainability and Director of the Research Centre for Carbon Solutions at Heriot-Watt University.

Professor Mark Symes (University of Glasgow)

Leader of the Symes Group at University of Glasgow and Professor of Electrochemistry and Electrochemical Technology.

Professor Sara Walker SFHEA (University of Birmingham)

Professor of Energy and Co-Director of the Birmingham Energy Institute.

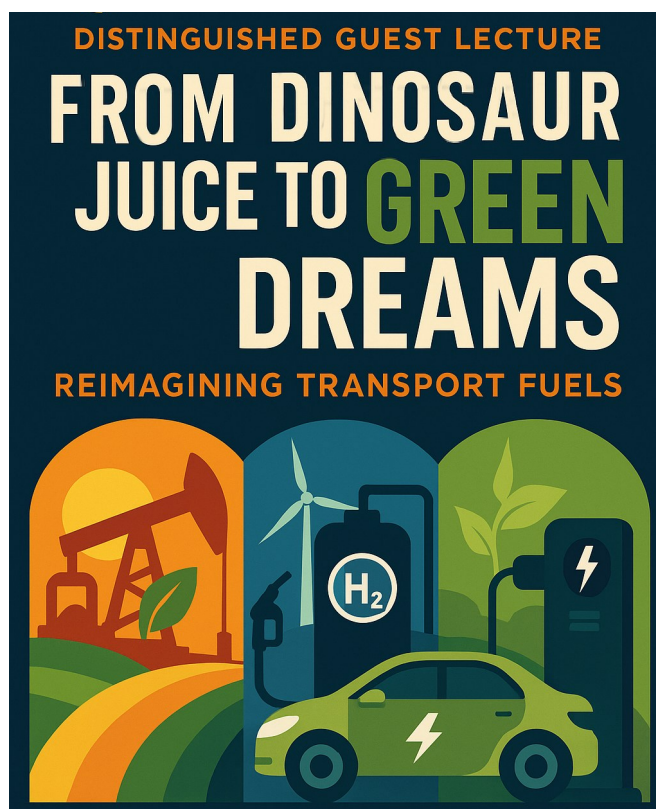
2026 ECG Distinguished Guest Lecturer

Professor Nazia M Habib FRSA (University of Cambridge)

Founder and Research Centre Director for the Centre for Resilience and Sustainable Development. Professor Habib’s research currently focuses on integrating systems thinking for applied resilience and sustainable development in the context of good governance, responsible innovation and sustainable investment.

ECG 2026 AGM

The ECG’s 2026 AGM will take place during the mid-afternoon break of the 2025/26 DGL event and will run from 14:20 to 15:20. DGL registration is not required to attend the AGM.



Registration

Early Bird Members: £45

Early Bird Non-members: £60

Other discounted rates available.

Members: £60 (free to join as an RSC member)

Non-members: £75

EARLY BIRD is available until **13th February 2026**

Registration: <https://events.rsc.org/rsc/3292/register>

AGM Registration: <https://events.rsc.org/rsc/3302/register>

Registration includes:

- Attendance at the sessions
- Refreshments throughout the event
- Lunch
- Attendance at the AGM

Upcoming Meeting

Workshop on evaluating the reliability and relevance of environmental exposure data

A one-day meeting for environmental chemists involved in the collection and use of environmental exposure data.

Where: The Royal Society of Chemistry, Burlington House, London, W1J 0BA

When: 24th March 2026, 10:00-16:00

This one-day Symposium organised by the Environmental Chemistry Group focuses on a formalised approach to evaluating the reliability and relevance of chemical exposure data following the recommendations of a recent SETAC Technical Workshop.

Conference Aims

Formalised approaches for evaluating the ecotoxicological hazard information relating to chemicals have been available for some time, but comparable schemes have not previously been available for the evaluation of environmental exposure data.

Criteria for Reporting and Evaluating Exposure Datasets (CREED) is a practical tool that provides a systematic approach and criteria for the consistent and transparent evaluation of the reliability (quality) and relevance (fitness for purpose) of exposure data for use in environmental risk assessments of chemicals.

This workshop will be of interest to anybody involved in the collection or use of environmental exposure data, particularly those involved in performing chemical risk assessments for regulatory purposes.



[Criteria for Reporting and Evaluating Exposure Datasets \(CREED\) for Use in Environmental Assessments: A Timely Development](#)

Confirmed Speakers

- **Dr Graham Merrington (wca, UK)**
Water and land quality issues
- **Dr Stephen Lofts (UK CEH, UK)**
Processes controlling soil and surface water chemistry
- **Dr Emma Pemberton (Environment Agency, UK)**
Impacts on the environment and health from hazardous substances
- **Dr Leonard Oste (Aveco de Bondt, NL)**
Water, soil, and sediment quality
- **Arjen Markus (Deltares, NL)**
Coastal and inland water quality
- **Dr John Wilkinson (University of York, UK)**
Analytical chemistry and environmental toxicology

Registration

Early Bird Members: £60

Early Bird Non-members: £80

Other discounted rates available.

Members: £80 (free to join as an RSC member)

Non-members: £100

EARLY BIRD is available until **13th February 2026**.

Registration: <https://www.rsc.org/events/detail/82266/workshop-on-evaluating-the-reliability-and-relevance-of-environmental-exposure-data>

Registration includes:

- Attendance at the sessions
- Refreshments throughout the meeting
- Lunch

Upcoming Meetings

#EnvChem2026: Chemistry of the whole environment

The highly successful #EnvChem series continues with #EnvChem2026.

Where: University of Warwick

When: 2nd and 3rd July 2026

#EnvChem2026 provides a forum for early career and established researchers working across environmental chemistry to share their latest research findings.

Organised by the RSC Environmental Chemistry Group, the meeting will comprise presentations and posters on the following themes:

- Climate and environmental processes in soil, water, and air
- Emerging contaminants and novel techniques
- The food-environment-climate nexus
- Atmospheric chemistry and climate forcing
- Ecotoxicology and planetary health
- Data-driven environmental chemistry

Confirmed keynote speaker

Dr Chris Jones (*Edwards Vacuum*)

As the Environmental Business Solutions Development Manager for Edwards Ltd, Dr Jones has been at the forefront of creating solutions for industries ranging from semiconductor and nuclear to military and pharmaceutical. Always eager to share his knowledge, Chris is passionate about helping e-commerce owners grasp their operations' local and global environmental impacts. To this end, he has participated in Circularity discussion sessions at SemiCon events and advised on various policies to drive towards a greener future.

Registration

Early Bird Members: £260

Early Bird Non-members: £300

Other discounted rates available.

Members: £300 (free to join as an RSC member)

Non-members: £345

#EnvChem2026 Chemistry of the whole environment

THEMES

- Climate and Environmental Processes in Soil, Water and Air
- Emerging Contaminants and Novel Techniques
- The Food-Environment-Climate Nexus
- Atmospheric Chemistry and Climate Forcing
- Ecotoxicology and Planetary Health
- Data-Driven Environmental Chemistry

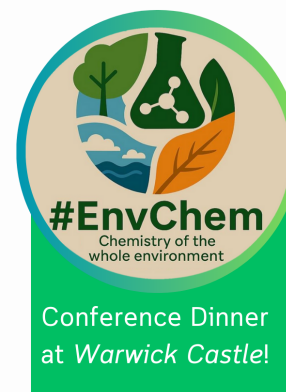


02 - 03 JULY 2026
University of Warwick

MORE INFO SOON!



RSC INTEREST GROUP
ENVIRONMENTAL CHEMISTRY



Online Registration

Members: £70

Non-members: £105

EARLY BIRD is available until **15th May 2026**

Details, abstract submission and registration can be found at this link: <https://www.rsc.org/events/detail/83006/envchem2026-chemistry-of-the-whole-environment>

Registration includes:

- Attendance at the sessions
- Refreshments throughout the event
- Lunch
- Attendance at the Conference Dinner