RSC INTEREST GROUP
FLUORINE CHEMISTRY

Newsletter

2024

Welcome to the third issue of the RSC Fluorine Chemistry Interest Group newsletter. We want to use this newsletter to inform you on what the Fluorine Chemistry Interest Group is doing and to highlight other events that are occurring within the fluorine community more broadly. We see fluorine chemistry as an area which spans disciplines, and we are always looking for new members and we especially welcome those who might have developed a recent interest in some aspects of fluorine. The Fluorine Chemistry interest group currently counts 316 members across 5 continents.

We hope you will enjoy this issue. Topics for the next issue can be discussed with the Group Secretary, Dr Will Brittain (william.d.brittain@durham.ac.uk). The Newsletter content is agreed by the Fluorine Chemistry Interest Group Committee.

In this issue

Editorial From the Chair

Dear RSC Fluorine Chemistry Interest Group members,

Welcome to the third Newsletter edition of our interest group. The RSC Fluorine Chemistry Group was formed in 2001 in recognition of the importance of fluorine to all sectors of the chemistry enterprise. The group exists to promote activity in fluorine chemistry and to help develop the careers of RSC Members associated with the Interest Group. This is enabled through facilitating research discussions and interactions with a particular emphasis on bringing university researchers and industrialists together and at all career stages. This *Newsletter* is an initiative of the RSC Fluorine Group committee aimed at improving communication with Members on an annual basis, as direct e-mailing is prohibited due to GDPR legislation. Information about the current committee membership with their contact details is provided.

Our main activity is the organisation of the annual RSC Fluorine Symposium, which takes place over two days at a UK University each year. In this newsletter we report on the successful symposium held this year (4-5th April 2024) at the University of Newcastle. It was delightful to see many new research groups attending, showcasing a very diverse range of research topics. You will also find the announcement of next year's symposium, which will be held in London.

PFAS continues to be in the news, and as fluorine chemists this is a topic that will concern us all. Our main aim is to provide sound information to promote a healthy debate about this difficult issue, and hopefully to contribute to finding solutions big and small. We are maintaining a bank of interesting literature and policy documents on this topic which is available upon request. We will be grateful to receive additional interesting contributions.

We are of course very keen to include news from your side, and to highlight any events that you organise that would be of interest to Group members, awards/Prizes received etc. Please get in touch with the Group secretary if you wish to highlight such information in future issues.

Finally, I'd like to finish by asking you to encourage the new arrivals in your research group to apply for RSC membership and join the RSC Fluorine Chemistry group! I look forward to seeing you in London.

Best regards

Bruno Linclau (RSC Fluorine Committee Chair)

Fluorine Chemistry Interest Group Committee Members

Prof. Bruno Linclau (Chair)

Bruno Linclau is Professor of Organic Chemistry at Ghent University, Belgium, where he leads the Organic and Medicinal Chemistry Group. He also has a part-time appointment at Southampton University, where he was based until 2021. His research is focused on investigating the influence of fluorination on physical properties relevant in drug discovery, such as lipophilicity, hydrogen bonding, and conformation, working with small molecules, carbohydrates, steroids and amino acids. He has been the RSC Fluorine Group Chair since January 2022, having served a stint as Secretary before that. After enjoying the hiking and mountainbiking in the Hampshire and Great Britain countryside, he now returned back to his roots, road cycling on the flat Flemish cycleways.

Dr Will Brittain (Secretary)

Will is currently a Associate Professor of Organic Chemistry at Durham University. His research group utilises fluorine chemistry to tackle a broad range of problems across organic synthesis and catalysis. Currently Will is working on using perfluorinated aromatic compounds in synthetic methodology development with an interest in the generation of highly reactive fluorinated species for example in his recent report on the use of pentafluoropyridine for the synthesis of acyl fluorides. Will was elected to the RSC fluorine committee in 2020 and currently holds the role of secretary. Outside of chemistry Will enjoys walking and baking sourdough pizzas at the weekend.

Prof. David O'Hagan (Treasurer)

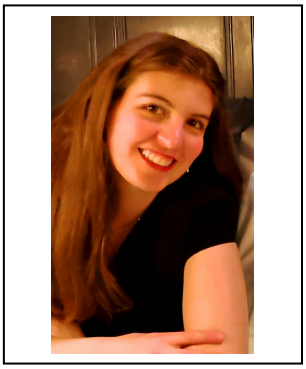
David O'Hagan is a Professor of Organic Chemistry at the University of St Andrews. He has explored the synthesis and properties of organofluorine compounds throughout his career and has had a long interest in fluorinated natural products. His lab identified a naturally occurring fluorination enzyme and the enzyme has been used to incorporate fluorine-18 into molecules for positron emission tomography (PET). Interests extend to the influence and properties of fluorination in organic compounds and extend to bioactives and fluorinated organic materials.

He was awarded the ACS Award for Fluorine Chemistry in 2012 and the Prix Moissan by the *Fondation de la Maison de la Chime* in 2018. He is a founding member and a past Chair of the RSC Fluorine Group and as well as keeping an eye on the finances of the Fluorine Group he has recently been elected President of the Organic Division of the RSC. Outside of chemistry he takes great pleasure in winding up his grandchildren and he likes climbing the Munroe mountains in Scotland.

Dr Matthew Hopkinson (member)

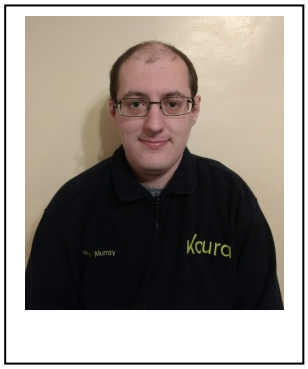
Matt Hopkinson is a Senior Lecturer in organic chemistry at Newcastle University. Before moving to the UK in 2021, he was based in Germany and started his independent career at the Freie Universität Berlin. A major part of his research programme concerns the development of new reaction methodologies for installing fluorine and larger fluorinated functional groups onto organic molecules. Current areas of interest include the exploration of novel nucleophilic reagents for preparing molecules featuring SR_F (R_F= poly- or perfluoroalkyl) and SeRF groups, radical trifluoromethoxylation methodologies and the development of selective C-F bond insertion reactions. Matt joined the RSC fluorine committee in 2023 and will host the next postgraduate meeting in Newcastle in April 2024. Outside of chemistry Matt enjoys getting out and about in the Northumberland countryside and can occasionally be found in the gym.

Dr Anna Vicini (member)



Anna Chiara Vicini is a senior scientist in Chemical Research and Development (CRD) at Pfizer, working on the development of APIs commercial routes and improvement of process sustainability. Her interest for "applied" and sustainable chemistry was apparent already during her PhD, conducted at the university of Oxford under the supervision of Prof. Veronique Gouverneur. Her research project focused on the activation of metal alkali fluorides with hydrogen bond donor organocatalysts to obtain enantioenriched beta-fluoroamines and included scaling up this transformation to >100 g. Though not working every day on fluorination in her current role, she remains

interested in the progress of the field and since 2023 she has joined the RSC fluorine group, bringing an industrial perspective to the committee.



Dr Ben Murray (member)

Ben Murray is a research chemist at Orbia Fluor & Energy Materials, based at Thornton Science Park near Chester. Orbia F&EM operates a mine-to-market business model, converting CaF_2 from their fluorspar mines in Mexico to HF, as well as AlF_3, then using that HF for the synthesis of more complex fluorinated products such as air-conditioning refrigerants, medical inhaler propellants, and energy storage materials. Ben joined the company in late 2021 after completing a PhD in the group of Prof. Graham Sandford exploring transformations of fluoroalkene refrigerant gases to pharmaceutically relevant building blocks. His current research at Orbia F&EM is focused on developing sustainable methods for the manufacture of fluorinated electrolyte salts and additives for lithium-ion batteries. Outside of chemistry, Ben is an avid collector of UNESCO world heritage sites and a keen quizzer, reaching the semifinals of University Challenge with Durham in 2019.

RSC Postgraduate Fluorine Meeting 2024 - Newcastle

The 22nd RSC Fluorine Interest Group Postgraduate Meeting was held on 4-5th April 2024 in Newcastle upon Tyne. Having returned to an in-person format last year following the COVID pandemic, this year's meeting again provided an opportunity for the community to come together and celebrate two days of fluorine chemistry with a programme of plenary lectures, short talks from early career researchers and a poster session. The event was held in Newcastle University's Urban Sciences Building, which forms part of the Newcastle Helix complex, a modern multi-million pound development focused on research and innovation in the heart of the city.

The meeting kicked off with a plenary lecture from Dr. Yi Jin from the University of Manchester, who gave an inspiring talk on fluorine in biological systems, specifically highlighting how metal fluoride complexes can enhance our understanding of GTPase enzymes. This was followed by three short talks that showcased the diversity of fluorine chemistry research going on in the community. Sebastiano Ortalli presented a photoredox approach for preparing ^{18}F-radiolabelled benzyl fluorides for applications in PET imaging while Dr. James Cumby's talk showed how fluoride incorporation can influence the thermal expansion properties of inorganic materials. The session was concluded by a talk from Sarah Patrick on the use of flow chemistry to synthesise and engage the nucleophilic difluoromethylating reagent, $PhMe_2Si\text{-}CF_2H$. After a short coffee break, the programme continued with two further presentations from early career researchers. Lilian Maas first described new

applications of bis(trifluoromethyl)peroxide (BTMP) as a reagent for installing OCF_3 groups onto organic compounds. This was followed by a talk from Calum Patel, who showcased his research using traditionally unreactive CaF_2 as a source of nucleophilic fluoride for organic synthesis. In the final talk of an inspiring day, the attendees were treated to a plenary lecture from Dr. Tatiana Besset from the University of Rouen in France. Giving a prize lecture as winner of the RSC Fluorine Chemistry Award 2023, Tatiana delivered a real tour de force of organofluorine chemistry, presenting some of the Besset group's many contributions to the synthesis of compounds featuring diverse fluorinated motifs. At the conclusion of the prize lecture, Tatiana was presented with their award, sponsored by F2 Chemicals Ltd. With the first day's talk schedule completed, the focus turned to the Urban Sciences Building atrium for the poster session. A total of 19 posters were on display with the session providing an opportunity to both discuss research and network with poster presenters from across academia and industry. With appetites built up and conversations in full flow, the delegates made the short 5-minute walk to the conference dinner venue, St. James' Park football stadium, home of Newcastle United FC. Festivities continued into the night in local watering holes and many new friends were made over the course of the evening.

The scientific programme started in earnest again the next morning, beginning with a talk from Tommy Poskin on the unique properties of Janus-face "all-*cis*" fluoro-cyclohexanes and their aggregation into supramolecular assemblies. The focus then turned to catalysis by fluorine-containing Lewis acids with a presentation by Sophia Moreen Gloria on a novel synthesis of tetrahydroquinolines using $B(C_6F_5)_3$. At the conclusion of the session, the focus moved away from research results to a discussion of an important and timely topic in the fluorine community: the ongoing regulatory situation concerning the use of perfluoroalkyl substances (PFAS). In an invited talk, Stephanie Metzger, policy adviser at the RSC, gave an insightful overview of the regulatory landscape in the UK, EU and USA, and the risk analysis and policy discussions currently taking place. The talk stimulated numerous interesting discussions, which continued into the following coffee break. The final session began with two presentations by postgraduate researchers. Firstly, Claire Dooley described her research on enantioconvergent nucleophilic fluorination reactions using chiral phase-transfer catalysts. This was followed by a report by Alexi Sedikides on the selective synthesis of (*Z*)-monofluoroalkenes employing fluorovinyl iodonium reagents. The scientific programme then concluded with a final plenary lecture by Dr. Matthew Tredwell from Cardiff University. This talk gave a fantastic overview of ^{18}F-radiochemistry, encompassing both the practical labelling of radiotracers for clinical PET imaging and the development of new fundamental radiofluorination methodologies. Finally, after much deliberation, prizes were awarded for the best talks and posters from early career researchers. The 1st place talk prize was awarded to Sophia Moreen Gloria from the University of Leicester for their talk entitled "$B(C_6F_5)_3$-Catalysed Synthesis of Tetrahydroquinolines". Runner-up prizes were awarded to Lilian Maas from the Free University of Berlin and Newcastle University for their talk entitled "BTMP – A Practical Reagent for Radical Trifluoromethoxylation Reactions" and Claire Dooley from the University of Oxford for their talk entitled "Enantioconvergent Nucleophilic Substitution via Synergistic Phase Transfer Catalysis". The 1st place poster prize was awarded to Sean Verschaeve from Ghent University for their poster on "Lipophilicity modulation by fluorination of bicyclo[1.1.1]pentane derivatives". Runner-up prizes were awarded to Mickaël Avanthay from the University of Bristol for their poster on "A scalable flow electrochemical hydrodefluorination of trifluoromethyl arenes enabled by silane oxidation" and Kler Huonnic from the University of Southampton for their poster on "Glycosidation and Glycosylation of Polyfluorinated Carbohydrates". The awards presentation brought to a close what had been a fantastic meeting that showcased the full breadth of exciting fluorine research being conducted in the UK and beyond. As with last year's event, the meeting provided a fantastic opportunity for the fluorine chemistry community to come together again following the COVID hiatus and was a thoroughly enjoyable two days. Following this success,

we are all looking forward to the 23rd RSC Fluorine Postgraduate meeting, which we are delighted to announce will take place next year at Burlington House, London on the 16th and 17th of April

23rd RSC Fluorine Postgraduate Meeting

The 23rd RSC Fluorine Postgraduate meeting will take place at the RSC premises in London (Burlington House) on the 16th and 17th of April 2025.

The programme of the meeting consists of invited lectures from established researchers, but there is a particular emphasis on enabling early career researchers (ECRs) including postgraduate students and postdoctoral researchers to present their recent work, both as oral presentations and in posters. Many companies attend and the meeting is an excellent opportunity for networking, exploring career opportunities and to discuss the exciting and varied science that is being carried out within our community. In this regard we value contributions from organofluorine groups and researchers who are developing new methodologies for preparing or analysing fluorine containing compounds or from those who are predicting the behaviour assessing the performance of fluorinated compound for different applications. It is recognised that cross-fertilisation between different disciplines and across the academia-industry interface is a major driver of innovation, and the Fluorine Group aims to facilitate that.

We will be in touch with information regarding registration and abstract submission for the meeting in the new year.

RSC Fluorine Prize 2025 – Call for Nominations

The call for nominations for candidates from the international Fluorine Chemistry community for the ***RSC Fluorine Award*** **for 2025** will be announced later this year. The Fluorine Award, which is awarded every two years, is associated with the RSC Fluorine Chemistry Group.
The Fluorine Award is a fully international award which is **not** restricted to members of the RSC. The Award will recognise the most meritorious contribution of a younger chemist (under 40 years of age – career breaks can be taken into account) working in any area of fluorine chemistry as evidenced by their publications. The Award will be judged by an international panel on behalf of the RSC Fluorine Chemistry Group.

An announcement email will be/has been sent out and posted on the RSC Fluorine Chemistry Group website (https://www.rsc.org/membership-and-community/connect-with-others/through-interests/interest-groups/fluorine-chemistry/awards/), but is reproduced below:

Dear Colleagues,

This is to let you know that nominations are now invited from the international Fluorine Chemistry community for candidates for the ***RSC Fluorine Award*** for 2025 with a deadline of **31 January 2025, 5pm GMT**.

The Fluorine Award, which is conferred once every two years, is associated with the RSC Fluorine Chemistry Group. It is a fully international award which is **not** restricted to members of the RSC. The Fluorine Award will recognise the most meritorious contribution of a younger chemist, working in any area of fluorine chemistry, as evidenced by their published contributions. The Award ***will be judged by an independent international panel*** on behalf of the RSC Fluorine Chemistry Group.

Previous winners of the RSC Fluorine Award are:

2023: Professor Tatiana Besset, Rouen, France

2021: Dr Pavel Mykhailiuk, Enamine Ltd, Ukraine

2019: Professor Abigail Doyle, Princeton, USA

2017: Professor Petr Beier, Prague, Czech Republic

2015: Professor Xingang Zhang, Shanghai, China

2013: Professor Tobias Ritter, Harvard, USA

2011: Professor Melanie Sanford, Michigan, USA

2009: Professor Jinbo Hu, Shanghai, China

2007: Professor Thomas Braun, Berlin, Germany

2005: Professor Norio Shibata, Nagoya, Japan

Nominations are invited on behalf of applicants who *must be under the age of 40* by ***31st December 2024****. Extensions due to career breaks as defined by ERC will be accepted*

The Award will consist of an award of £500 and the winner will be invited to give a lecture at the RSC Fluorine Chemistry Group Postgraduate Meeting in 2025.

Applicants must be nominated and should not make applications on their own behalf. Nominators should **only** send a covering letter, a candidate statement regarding career breaks (if applicable), a Curriculum Vitae (CV), and a full publication list by e-mail to the chair of the RSC Fluorine Chemistry Group:

Prof Bruno Linclau, Ghent University (Belgium): bruno.linclau@ugent.be

No additional support letters are admissable.

The ***deadline of 31 January 2025, 5pm GMT*** will be adhered to strictly.

Please would you pass on these details or the attached flyer to anyone who you think may be interested in this award.

With best wishes,

Bruno Linclau, Chair

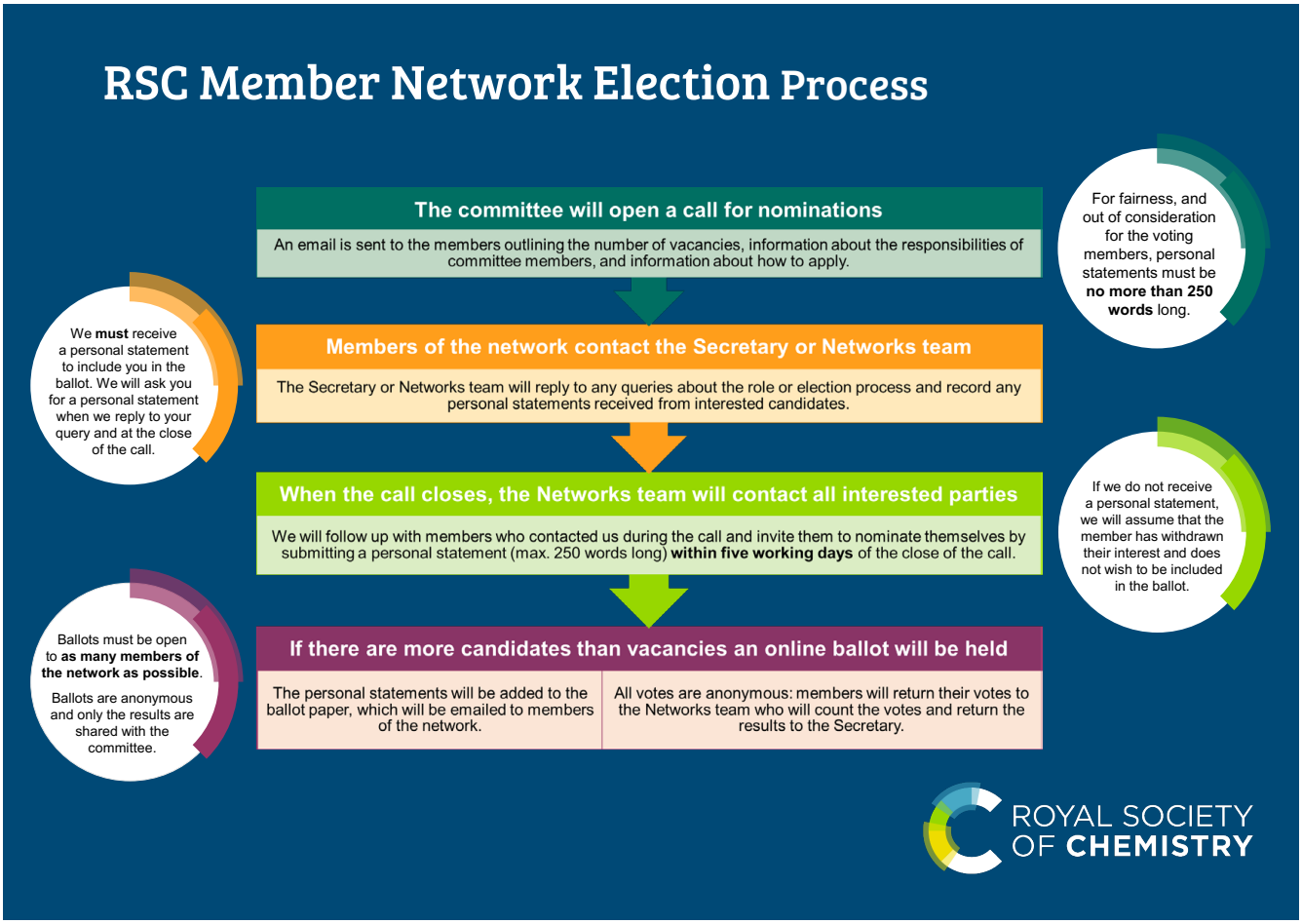
David O'Hagan, Treasurer

Will Brittain, Secretary

RSC Fluorine Chemistry interest Group

New Committee Members Wanted

Fluorine Chemistry Group committee vacancies: We are currently looking for new members for the committee. This is an opportunity to support your community, to share your love of science and to develop professionally! *One of the main expectations is that each committee member takes it in turn to host one of these meetings, which are held in the UK, while in post*. The election process is outlined below. The announcement email will be sent out by the RSC shortly. Please consider applying…and voting!



Celebrating Recent Successes

In this section we would like to highlight some recent advances in fluorine chemistry and the industries that rely on it.

Prof. Gary Schrobilgen wins the 2024 Moissan Prize

The 2024 Moissan Prize awarded by the Fondation de la Maison de la Chemie was given to Prof. Gary Schrobilgen from McMaster University (USA). The Moissan prize is named after Henri Moissan who was the first chemist to isolate elemental fluorine and the award is given to a scientist of international standing who has made significant contributions to the field of fluorine chemistry. Prof. Schrobilgen was recognised for his contributions to the field of inorganic fluorine chemistry. From his research his significant findings on main group and transition metal fluorides, polyatomic (Zintl) anions of main group elements and his work on radiochemistry including his synthesis of ^{99}Tc fluorine compounds and ^{18}F-labelled radiopharmaceuticals. Prof. Schrobilgen has given a presentation on 5 November 2025 during a symposium organized in Paris (France) by the "Fondation de la Maison de la Chimie", where he has received the specially made 2024 Moissan medal. You will be able to find more information on his achievements on the website of the "Fondation" : https://actions.maisondelachimie.com/les-prix-de-la-fondation/prix-henri-moissan/les-laureats-de-lannee/.

Prof. Véronique Gouverneur wins the Royal Society Davey Medal

The 2024 Royal Society Davey Medal has been awarded to Prof. Véronique Gouverneur from Oxford University. The Davey award is given to a chemist that has made a significant contribution to their field. Prof. Gouverneur was recognised for her contributions to the field of fluorine chemistry with applications in both medicine and positron emission tomography imaging.

https://www.chem.ox.ac.uk/article/veronique-gouverneur-among-royal-society-award-winners

Orbia Fluor & Energy Materials Wins Sustainability Award from Chemicals Northwest

Orbia's Fluor & Energy Materials business Koura has been honored as the winner of the U.K. Chemicals Northwest sustainability award during the association's annual ceremony held on March 21, 2024. The prestigious award program honors excellence in the U.K. chemicals sector in various categories and brought together 300 guests to celebrate 11 winning companies' contributions.

https://www.orbia.com/this-is-orbia/news-and-stories/Orbia-Fluor-Energy-Materials-Wins-Sustainability-Award-chemicals-northwest/

FluoRok raises £7.7m ($9.8m) to transform the safety and sustainability of fluorochemical production

FluoRok, an Oxford-based start-up has raised £7.7 million for the scale-up, manufacture and commercialisation of novel fluorochemical reagents and battery electrolyte salts. Founded in 2022, FluoRok is a University of Oxford spin-out that has developed a highly innovative and unique patented method to access fluorochemicals, a group of chemicals that contain fluorine and are key to the world's energy transition, healthcare and food supply.

https://www.fluorok.com/news/fluorok-raises-7-7m-9-8m-to-transform-the-safety-and-sustainability-of-fluorochemical-production/

Subscribe to the RSC Fluorine Chemistry Group!

Your membership is important! A healthy membership results in recognition from the RSC, also towards providing funding which we use to keep our annual symposium affordable. With the new academic year starting, you may also encourage the new people in your group becoming member of the RSC and the RSC Fluorine group. There is no extra charge when you select up to five Interest groups.

Next Committee Meeting

The next committee meeting will take place around the end of January 2025. If you have matters you would like to see discussed, please get in touch with a committee member.

Dates for the Diary

Below are some dates that might be of interest if you are into fluorine chemistry

RSC Desktop Seminar "PFAS – bad but good?" – Feb 2025, Speakers TBC

27th Winter Fluorine Conference – Clearwater, Florida, USA – 5th-10th January, 2025

23rd RSC Postgraduate Fluorine Meeting – London, UK, 16th-17th April, 2025

21st European Symposium on Fluorine Chemistry – Lisbon, Portugal - 3rd–9th August, 2025

Committee Member Contact Details

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