

# ANALYTICAL MATTERS

ISSUE 15 – SPRING EDITION 2020

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Welcome to the fifteenth issue of Analytical Matters, the e-newsletter of the Analytical Division of the Royal Society of Chemistry (RSC). Analytical Matters aims to showcase the wide range of analytical science activities being run across the Royal Society of Chemistry Analytical Division as well as linking with parts of the UK analytical community beyond our membership.

With the ongoing COVID-19 crisis, the power and importance of analytical science has been highlighted, perhaps, more than ever before. The need for high-throughput, rapid and reliable testing, as well as developing new measurement techniques for verification and characterisation is paramount. I thank all of you involved in this work. For those of you not working directly on COVID-19, the advances we make in analytical science now, will undoubtedly help us with the, as yet unknown, challenges of the future.





## ANALYTICAL DIVISION ACTIVITIES

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### COVID-19 update

It has become clear that, as a result of COVID-19, our community will face restrictions on holding physical events and travel for a considerable time and that many of the Divisions' usual activities (including scientific meetings, symposia and travel grants) will not be able to go ahead in their usual form.

The current status of our activities is given below and Analytical Division Council are currently exploring alternatives to support our community through this difficult time.

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#### **Analytical Research Forum**

The meeting due to be held on 16th June 2020, Burlington House, London has been cancelled. The annual meeting for early career researchers will run again in June 2021 and abstract submissions will reopen at the end of 2020.

#### **Measuring Cancer Earlier**

The joint Analytical Division and Cancer Research UK workshop and networking event due to be held on 12 June 2020, Burlington House, London has been

### **COVID-19 – find support**

You can find detailed support for individuals, researchers, educators and businesses from the Royal Society of Chemistry and other organisations, including the UK Government on their [webpage](#).

### **Chemists' Community Fund**

If current events are having a negative financial impact on you, your partner or dependants – especially if they have led to changes in your regular income – please speak to the Chemists' Community Fund, the benevolent fund for RSC members.

While we recognise that the support we can offer will be limited, we may be able to offer financial support to you and your family as a Royal Society of Chemistry member.

**Looking to gain chartered status? The Analytical Methods Committee (AMC) provide Technical Briefs, ideal for supporting continuing professional development.**

The Analytical Methods Committee (AMC) is the Committee of the Analytical Division (AD) that handles matters of

## RSC CPD Resources

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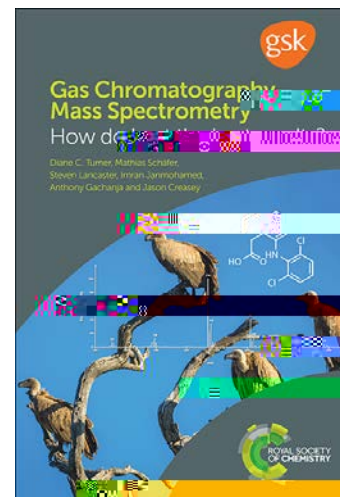
The Royal Society of Chemistry encourages all members to undertake suitable professional development. One of the ways in which RSC support this is through their approval of training courses, where they approve training courses offered by 3<sup>rd</sup> party training providers.

A training course has to go through a rigorous peer-

Since 2016, we have trained over 350 scientists from 26 African nations. With activity postponed in 2020, by the end of 2021 we will have exceeded our target of 400 scientists trained in the key analytical techniques of GC-MS or LC-MS, published a course text book, as well as training Local Trainers to train others, leaving a self-sustaining programme and a lasting legacy.

As of this month I am pleased to announce that like our GC-MS course the LC-MS course has been externally reviewed and now forms part of the growing list of chemical sciences training courses that have been approved by the Royal Society of Chemistry for professional development. We are also continuing to evaluate the success of the courses. An evaluation of the programme to date has highlighted the range of ways in which the course has benefitted scientists, including:

- x Improving knowledge, confidence and ability to use GC-MS equipment
- x Improving current research
- x Sharing skills with colleagues
- x Teaching analytical skills



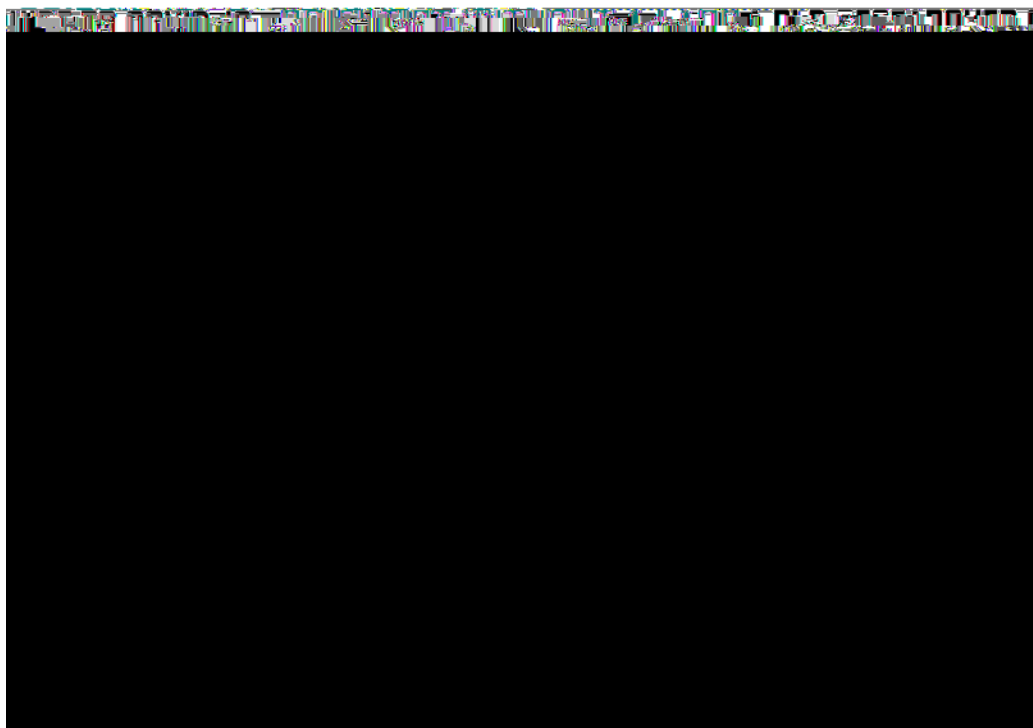
Additionally, 100% of responses stated they would recommend the course to others highlighting the success of the current training programme. Demand is significantly out stripping the number of places we are currently able to offer and due to the success of the current programme, we are now making plans for Phase 2 (2021-2027).

To find out more or if you would like to support phase 2, please contact Francesca Porcu at [africa@rsc.org](mailto:africa@rsc.org)

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## Analytical Scientist without a lab?

Many of the analytical community are lab-based scientists and cannot go to the lab right now during the pandemic. Please see the useful infographic by Dr Zoë Ayres below (reproduced with permission), designed to help alleviate pressure, guide productivity and maintain mental wellness. Find an enlarged version [here](#)



### Community for Analytical Measurement Science (CAMS) Update

The Community for Analytical Measurement Science (CAMS), an industry-led network of world class analytical measurement science training, research and innovation, has been busy over the last few months. On the housekeeping front, CAMS incorporated has been set-up as a private not-for-profit company limited by guarantee, with the Community's aims, objective and governance having been formalised and adopted by its members.

CAMS Industry Advisory Board continues to work with academic institutions to identify collaboration opportunities and respond to current challenges aligned within the 4 CAMS themes:

1. Point of use sensors and photonics
2. Novel instrumentation or techniques
3. Data analytics
4. Complex mixtures, separations and detection

Work also continues in supporting our academic members and CAMS awardees in their research efforts during these unusual times, with many activities now taking place virtually. Thursday 07 May sees the first in a series of Webinars highlighting how CAMS members are responding to and supporting the response to COVID-19. If you'd like to take part in future events please don't hesitate to contact the CAMS Secretariat. [highlecpoT 1 scn 34.56 474.3 \(h\)3.2 \(at\)o2 \(e C\)-1viDt-.3](mailto:34.56474.3(h)3.2(at)o2(e)C-1viDt-.3)



## MEETING REPORTS

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Theobald Lecture 2020 - Between Science and Art: investigating, understanding and protecting our cultural heritage

The Theobald Lecture took place on the 17<sup>th</sup> of February 2020, at the Hochhauser auditorium at the Victoria and Albert Museum (V&A) in London. This meeting was a successful collaboration between the V&A Research Institute, the RSC Analytical Methods Committee (AMC), and the Analytical Methods Trust. The main highlight of this event titled 'Between Science and Art: investigating, understanding, and protecting our cultural heritage' was the awarding of the 2019 LS Theobald Lectureship to Dhe a 13.1 (ur9)-6M5

The amount of acid present in wine varies and depends on the region the wine comes from, the climate the grapes were exposed to, and the conditions during fermentation. As the acid content influences the taste of the wine it is closely monitored and can be altered by addition of the base potassium hydrogen carbonate. Sulphur dioxide or sulphites are added to wine as a preservative to inhibit the growth of microorganisms and therefore ensure the wine is safer to drink. Sulphite is also an antioxidant and prevents the deterioration of flavour and discolouration by inhibiting both enzymic and non-enzymic browning. Since sulphites are normal products of the human body's metabolism, we are able to cope with them provided the levels are not too high. Therefore, the amount of sulphite added to wine must be carefully regulated as, in very high concentrations, it can produce gastric irritation and destroy the essential nutrient thiamine (Vitamin B1). Wine also contains low levels of iron which is taken up from the soil by the vine as the grapes grow and mature.

In the first analysis the pupils assume that tartaric acid is the only acid present and determine the amount present in white wine by a visual titration against a standard solution of sodium hydroxide. The determination of sulphur dioxide content is based on its reduction of iodine to iodide. In the analysis excess iodine is added to an acidic sample of the wine and the amount of unreacted iodine is determined by titration with sodium thiosulphate. A comparison with a blank titration allows the amount of sulphur dioxide to be determined. The lower level of iron requires the more sensitive method of colorimetry using a solution of 1,10 phenanthroline as the complexing agent. The absorbance of the complexed wine sample is compared to a calibration plot obtained from a series of standard solutions of iron(II).

The winning team from Lumen Christi College Derry was presented with their certificates and book tokens to the value of £200 by Dr Terry Cross OBE. The pupils from Rainey Endowed School (£100) came a close second, followed by Belfast High School (£80) and Rathmore Grammar School (£60). Dr Terry Cross OBE praised the pupils' practical skills and was particularly impressed at how they were able to put their knowledge of chemistry theory into practice. Addressing the pupils and their teachers he said: "As a business man and employer I am delighted to see high quality team work and problem-solving skills used in real-life scenarios. Our future economy relies on having the type of talented and dedicated young people I have observed here today."

All participants were found to meet the required level of accuracy and precision in their analyses and so were each presented with a book token and a certificate to mark their attainment. Finally, on considering the pupils' finding that a standard glass of Marquis de la Ligne Bordeaux Blanc would only contribute 4% to the recommended daily intake of iron, sticking with fortified breakfast cereals, lentils and spinach remains a more effective and healthier option!

**Photo: (from left) Dr Michael Harriott (Chair of The NI Analytical Division of RSC), the winning team of Patrick Gormley, Sean Morrison and Lewis McGarrigle, and the event sponsor Dr Terry Cross OBE, owner of Château de La Ligne in Bordeaux.**

To view previous issues of Analytical Matters please use the link: [http://rsc.li/analyiaf-\(r\)79d1](http://rsc.li/analyiaf-(r)79d1) >>BDC