

Chris Nortcliffe

At Sterling, our highly experienced team members and their passion for what they do are central to who we are. This month, we spoke with Chris Nortcliffe, Mass Spectrometry Manager at Sterling's Deeside facility, to learn more about Sterling's mass spectrometry capabilities.

Can you briefly describe your background and current role at Sterling?

I completed my undergraduate degree at the University of Edinburgh, studying medicinal and biological chemistry. I then earned a master's degree in Proteomics and Cell Technology from the University of Glasgow before attending the University of Manchester for my PhD in Biophysical Chemistry. All throughout my higher education, I have worked with mass spectrometry. While working towards my PhD, I performed research on protein structure and non-covalent interactions of various biomolecules using mass spectrometry and ion mobility.

After receiving my PhD, I worked for several years at SCIEX, which makes mass spectrometers and other critical analytical chemistry equipment. There, I served as Applications Specialist for LC/MS Biologics. In this role, I worked a lot with antibodies, antibody drug conjugates, and protein-drug conjugates, preparing me well for the work I do at Sterling today.

I recently joined the Sterling team as Mass Spectrometry Manager, which is a new position at the Deeside site. I was excited about this opportunity, as I wanted a role that would allow me to engage in more customer-facing, business development work while still performing a lot of the hands-on, analytical chemistry work that I enjoy. It also enables me to apply my expertise in using the specialist processes and mass spectrometry equipment to support the bioconjugation team in conducting robust, quality analyses. Because of my familiarity with the instrument, I was able to really hit the ground running when I started this new role, which has been great.

Why is mass spectrometry important for bioconjugation projects?

The mass spectrometry instrument is essentially an incredibly accurate weighing scale, which enables us to determine molecular weight, and in turn understand key details about a molecule's structure and chemical properties. For ADCs in particular, mass spectrometry is necessary for evaluating the product's drug-to-antibody ratio (DAR), which has important implications for therapeutic efficacy. That's why it's incredibly important that we get highly accurate results in order to ensure that the product delivers the desired potency and toxicity.



Fast Facts

ROLE

Mass Spectrometry Manager

JOINED STERLING

September 2021

EDUCATION

PhD in Biophysical Chemistry, The University of Manchester

SPECIALISATIONS

Mass spectrometry, protein chemistry, assay development, chromatography

What prompted Sterling to add the Mass Spectrometry Manager position?

Sterling's Deeside facility recently acquired a new piece of mass spectrometry equipment to obtain more accurate measurements for conjugated products. Mass spectrometry can be quite complex, and Sterling is committed to delivering continued quality in every customer project. To repeatedly deliver the best possible mass spec results, they wanted to onboard a new team member who had deep familiarity with this particular instrument in order to get the most out of the analyses they perform and help to thoroughly address any challenges as they come up.

Since I have a lot of experience using this equipment, analysing results, training users, and troubleshooting issues from my time at SCIEX, I felt that the role was well suited to my skillset. This position enables me to work through any challenges the team experiences with mass spectrometry and help generate the most accurate results. For example, with ADCs, you'd typically expect to see multiple peaks in the results, and you'd assume that some represent the drug-bound form while the others are the naked antibody. A lot of times, however, it's not so clear cut, which is where I come in. I can look at any unexpected results or inconsistencies to understand the cause and obtain the accurate results we need.

Mass spectrometry is really critical in the context of a project involving antibody drug conjugates and protein-drug conjugates, so it's important to ensure that our results are highly accurate.

What are some of your key responsibilities as Mass Spectrometry Manager?

A lot of my role involves supporting the bioconjugation team with mass spectrometry. I run mass spectrometry analysis on conjugated products, and I look at any anomalies to identify the cause and work out accurate measurements. Mass spectrometry is really critical in the context of a project involving antibody drug conjugates and protein-drug conjugates, so it's important to ensure that our results are highly accurate and instil confidence in our customers. It also frees up some of the bioconjugation team's time, as they can spend less time working out mass spec results and more time focusing on other important aspects of analysis.

We also run samples from Sterling's other sites. Our mass spectrometry services certainly aren't limited to bioconjugation, and having the specialised equipment on hand at Deeside

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enables us to efficiently generate accurate results for customers who have a project based out of another Sterling site.

In addition, we're beginning to offer services specifically for mass spectrometry. Because we have this sophisticated equipment and the expertise to deliver highly accurate results, we offer a compelling value proposition for customers who need mass spectrometry work done as part of their larger projects. I've been working a lot on expanding our mass spectrometry services to bring in customers who may need assistance just in that area. I enjoy working directly with customers on a more consistent basis, and I'm excited to continue elevating our mass spectrometry approach and engaging with new customers.

Why should a customer choose to work with Sterling for mass spectrometry?

The mass spectrometry equipment we have at Deeside is located in the process development lab, where our team handles highly cytotoxic compounds, and it is set up in a controlled environment with temperature controls, airlocks, and HEPA filters. The bioconjugation team works with these cytotoxic materials under fume hoods, and they can then bring them directly to the instrument to be analysed. This controlled environment is a key differentiator for us, as we can run analyses on highly potent materials like these while ensuring the safety of our team members.

The proximity of our mass spectrometry equipment to the products in the lab is a compelling advantage. Because the instrument is so close to the conjugation chemistry, it gives us better control to achieve the best results.

In addition, we have the ability to contribute mass spectrometry services to customers' projects separate from conjugation. For customers who do not have advanced mass spectrometry capabilities in-house, we can provide our expertise on various protein and biopharmaceutical projects to deliver high-quality data. All of this is supported by our focus on collaboration and partnership, as it's important that we understand what the customer is looking to get out of our analysis so that we can provide quality results.



Dudley, Northumberland, UK
+44 (0) 191 250 0471

Cary, North Carolina, US
+1 (919) 678 0702

Germantown, Wisconsin, US
+1 (262) 251 5044

Deeside, Wales, UK
+44 (0) 124 498 0850