Savillex Success Story

C-Flow s-Type PFA Nebulizer Increases Productivity in Semiconductor Analysis

About the Customer

A leading semiconductor device manufacturer in the US had issues with the PFA nebulizers installed in the ICP-MS (Inductively Coupled Plasma Mass Spectrometry) tools they use to measure trace metals in process chemicals. The nebulizers used had a relatively short lifetime, resulting in higher tool downtime. They needed a better solution.

Challenge: To minimize downtime of ICP-MS tools used in semiconductor labs.

Solution: Savillex s-Type PFA nebulizer.

Result: Easier troubleshooting and longer nebulizer lifetime reduces tool downtime.

The Challenge

Inert to every process chemical, highly efficient and with no measurable elemental background, PFA nebulizers replaced glass nebulizers in ICP-MS tools used in the semiconductor industry in the early 2000s. Compared to glass nebulizers, however, PFA nebulizers also had some drawbacks: lifetime was shorter – typically a few months vs. one year or more for glass. And since the uptake line of the PFA nebulizer was fixed, if it was damaged, the nebulizer had to be replaced.

Also, troubleshooting a high elemental background was difficult because the operator could not know if the source was the uptake line/autosampler probe or the nebulizer itself. Nebulizer troubleshooting and qualification after replacement resulted in significant downtime of the ICP-MS tool for our customer.

The Solution

Savillex introduced its C-Flow (fixed uptake line type) PFA nebulizer range in 2006, which became widely used in ICP-MS tools in the semiconductor industry. Then in 2021, Savillex introduced the C-Flow s-Type PFA nebulizer range. What makes the s-Type unique is that it has the same high sensitivity as a conventional fixed uptake line PFA nebulizer, but with the convenience of a demountable (removable) uptake line. Key to the s-Type is a new, Savillex-designed zero dead volume connector on the uptake line, giving the s-Type a sample washout speed that is just as fast as a fixed uptake line nebulizer.

The real benefits of the s-Type, however, are its improvements in usability and productivity. From time to time a nebulizer will exhibit an elevated background signal: this may be due to carryover of a high sample, or due to a damaged autosampler probe that is trapping sample solution. With the s-Type, the operator can quickly change out the uptake line and probe to check it – no need to install and requalify a new nebulizer. Or if the nebulizer body itself is the problem, it can be

exchanged with no need to change the uptake line/probe, avoiding several lost hours spent cleaning a new nebulizer with fixed uptake line.

C-Flow s-Type PFA Nebulizer

The Result

In switching from fixed uptake line PFA nebulizers from another manufacturer to the C-Flow s-Type, the US semiconductor lab was able to reduce tool downtime significantly due to faster troubleshooting and maintenance. Importantly, they also report significantly longer nebulizer lifetime with the s-Type. With the older design PFA nebulizers they had used, they typically saw lifetimes of 3-4 months. On switching to the s-Type, they find they typically last 12 months or more. That's a significant saving in replacement costs, but more importantly, savings in reduced ICP-MS tool downtime due to qualification of new nebulizers – not to mention lost sample runs due to the more frequent failures of older design PFA nebulizers. The customer estimates that 6 to 12 days per year of ICP-MS tool downtime (per tool) are being saved thanks to the use of s-Type nebulizers.

Learn More

Interested learning more about the benefits of Savillex's PFA nebulizer technology? Click here to visit our website for more information.

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