

## Magnetic sector SIMS & Semiconductors

- Since the construction of the first **magnetic sector Secondary Ion Mass Spectrometers (SIMS)** in the early 1960s, SIMS have been heavily utilized by the **semiconductor industry**.
- Magnetic sector SIMS are used for the analysis of samples from **all stages of the production process**, beginning with plain wafers through to fully manufactured devices.
- **Magnetic sector SIMS**, e.g. the CAMECA IMS 7f-Auto model, are particularly well adapted for SIMS analysis in **“dynamic” mode**.

## Dynamic SIMS main features

- **Continuous** primary beam
- A **magnetic field** is used to separate ions based on their mass-to-charge ratio.
- All masses can be detected and monitored
- High mass resolution and **excellent detection limits** (ppb range).
- **Depth profiles** up to 80  $\mu\text{m}$ .
- Possible to provide qualitative & quantitative analysis (with appropriate references).
- **Analysis areas** of 5  $\mu\text{m}$  to 250  $\mu\text{m}$  diameter.
- Limited number of elements that can be monitored in a depth profile.
- Allows identification of species through **multiple layers**.

## Dynamic SIMS & Ion implants

- As the world of semiconductors continues to advance, the **methodology used within SIMS analysis** has also evolved.
- However, one aspect of SIMS analysis that has not changed in 50 years is the **use of ion implants to quantify dynamic SIMS data**.
- This webinar provided an introduction to the **characterization of ion implants** and how to use the **implant to quantify an unknown concentration** in the same material.
- Some **common errors and pitfalls** surrounding ion implantations have also been discussed.

### Our Speaker

- **Carina Gill** works at **Loughborough Surface Analysis Ltd. (LSA)**, a contract analysis lab in Loughborough, UK, specializing in magnetic sector SIMS.
- **LSA has five operational CAMECA SIMS instruments**, one IMS 3f, two IMS 4f and two IMS 7f-Auto.
- Alongside continuing to work for LSA, **Carina is currently studying for a PhD** at the University of Nottingham.

Watch the webinar:

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