

Secondary Ion Mass Spectrometry (SIMS)



Leibniz Institute
for high
performance
microelectronics

Technical Parameters

Magnetic Sector SIMS System:
CAMECA IMS WF

Primary Beam: O and Cs Ion Sources
Signal Detected: Secondary Ions

Elements Detected: H – U
Lateral Resolution: 10 μm
Depth Resolution: 1 – 3 nm
Detection Limits: 10^{13} - 10^{16} at/cm³

B / HE:	$5 \cdot 10^{13}$ at/cm ³
B / LE:	$2 \cdot 10^{15}$ at/cm ³
As / HE (HMR):	$5 \cdot 10^{13}$ at/cm ³
As / LE (HMR):	$2 \cdot 10^{16}$ at/cm ³
P / HE (HMR):	$2 \cdot 10^{14}$ at/cm ³
P / ME (HMR):	$1 \cdot 10^{15}$ at/cm ³
P / LE (HMR):	$5 \cdot 10^{16}$ at/cm ³

HE – High Energy; LE - Low Energy
HMR – High Mass Resolution



Application areas

- Dopant and impurity depth profiling
- Composition and impurity measurements of thin films
- High-precision matching of process tools, such as ion implanters and CVD etc.

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