

APPLICATION NOTE

SIMS Detection Limits of Selected Elements in Diamond and Related Materials Under Normal Depth Profiling Conditions

DISCUSSION

SIMS is a powerful analytical technique which allows detection of all elements from H to U with excellent sensitivity. The table provides a list of typical detection limits for impurities in Diamond and Related Materials matrices. These detection levels are for normal depth profiling conditions of blanket wafers. Detection levels for device samples depends on the size of the available analysis area.

O ₂ ⁺ Primary Ion Beam Positive Ions		Cs ⁺ Primary Ion Beam Negative Ions	
Element	DL (atoms/cm ³)	Element	DL (atoms/cm ³)
Li	1e13	H	5e17
B	5e13	B	1e16
Na	3e13	N	6e15
Mg	5e13	O	2e17
Al	2e13	F	1e15
K	5e12	P	3e14
Ca	1e14	S	1e15
Ti	8e12	Cl	1e15
V	5e12	As	2e15
Cr	1e13	Si	4e16
Mn	5e12	Ge	1e15
Fe	5e13	-	-
Ni	1e14	-	-
Cu	2e14	-	-