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APPLICATION NOTE

SIMS Detection Limits of Selected Elements in Si Under Bulk Analysis Conditions

DISCUSSION

SIMS is a powerful analytical technique which allows detection of all elements from H to U with excellent sensitivities. The table provides a list of detection limits for typical dopants and impurities in Si matrix under bulk analysis conditions.

O_2+ Primary Ion Beam Positive Ions		Cs+ Primary Ion Beam Negative Ions	
Element	**DL atoms/cm^3 (ppbw)**	**Element**	**DL atoms/cm^3 (ppbw)**
He	1E+17 (286)	H	5E+16 (36)
Li	5E+11 (0.003)	C	1E+14 (3)
B	1E+12 (0.008)	N	5E+13 (0.5)
Na	5E+11 (0.001)	O	1E+15 (12)
Mg	1E+12 (0.02)	F	1E+14 (1)
Al	5E+12 (0.1)	P	1E+13 (0.2)
K	5E+11 (0.001)	S	2E+14 (10)
Ca	2E+12 (0.08)	Cl	5E+14 (23)
Ti	1E+12 (0.03)	As	1E+13 (0.5)
Cr	3E+11 (0.01)	Ge	5E+13 (2.6)
Mn	2E+12 (0.1)	Sb	1E+13 (0.8)
Fe	1E+13 (0.4)	Au	1E+13 (1.4)
Ni	1E+14 (4)	-	-
Cu	1E+14 (4)	-	-
Zn	1E+14 (6)	-	-
Mo	1E+14 (7)	-	-
In	1E+13 (0.8)	-	-
W	5E+13 (7)	-	-

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