

**AN 444****SIMS Detection Limits for Selected Impurities
in Si Bulk Conditions**

November 29, 2007 (Version 1.0)

Discussion

SIMS is a powerful analytical technique which allows detection of all elements from H to U with excellent sensitivity. SIMS analysis under bulk mode provides the best detection limits. The table provides a list of typical detection limits in Si under bulk analysis conditions.

Atoms/cm³ (ppbw)

O₂⁺ Primary Ion Beam for Positive Ions		Cs⁺ Primary Ion Beam for Negative Ions	
He	1E17 (286)	H	1E17 (71)
Li	5E11 (0.003)	C	2E15 (30)
B	5E12 (0.03)	N	5E13 (0.5)
Na	5E11 (0.001)	O	5E15 (60)
Mg	1E12 (0.02)	F	1E15 (14)
Al	5E12 (0.1)	P	1E13 (0.2)
K	2E12 (0.05)	S	5E14 (22)
Ca	5E12 (0.15)	Cl	5E14 (23)
Ti	1E12 (0.03)	As	5E12 (0.3)
Cr	1E12 (0.04)	Ge	5E13 (2.6)
Mn	5E12 (0.2)	Sb	1E13 (0.8)
Fe	5E13 (2)	Au	1E13 (1.4)
Ni	1E14 (4)		
Cu	1E14 (4)		
Zn	1E15 (6)		
Mo	1E14 (7)		
In	1E13 (0.8)		
W	5E13 (7)		

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