

Instrumental Methods

Chemistry

The main instruments, what each measures, and typical detection limits.

Technique against application.

Technique	Measures	Typical use
Atomic absorption	Metal concentration	Trace metals in water
ICP-MS	Elemental, very low levels	Environmental, forensic
GC-MS	Volatile organics	Drugs, pollutants
HPLC	Non-volatile organics	Pharmaceuticals
X-ray diffraction	Crystal structure	Solid identification
NMR	Molecular structure	Organic identification

Detection limit is the smallest amount distinguishable from a blank.
Quantitation limit is higher — where the value is reliable.