Elemental Scientific

Targeted Analyte Dilution
Sample-specific Analyte Dilution Control

LabSymphony

prep*FAST* 3 *with Targeted Analyte Dilution*

User-defined custom analyte lists for triggering automated dilution and re-analysis

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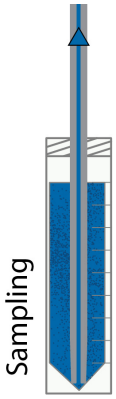
Automated Sample-specific Targeted Analyte Dilution for Precise ICPMS Analyses of Diverse Matrices

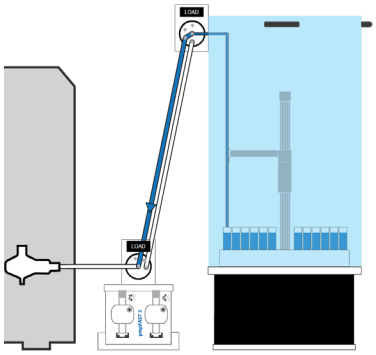
Synopsis

The prep*FAST* 3 autodilution and autocalibration system, with LabSymphony software, enables precise, sample-specific and analyte-specific dilution control for ICPMS analyses. Users may define custom target analyte lists to trigger automated dilution on a per sample basis. Based on the analytical data there are three possible cases: 1) No analytes out-of-range, 2) Only non-target analytes out-of-range, and 3) One or more target analytes out-of-range. prep*FAST* 3 will apply intelligent or user-defined dilution only in Case 3 when target analytes are out-of-range. This approach minimizes unnecessary re-run dilutions and maximizes instrument productivity.



1 Unknown sample is analyzed by ICP/ICPMS

2 Results for sample analytes are measured and compared to user-specified thresholds



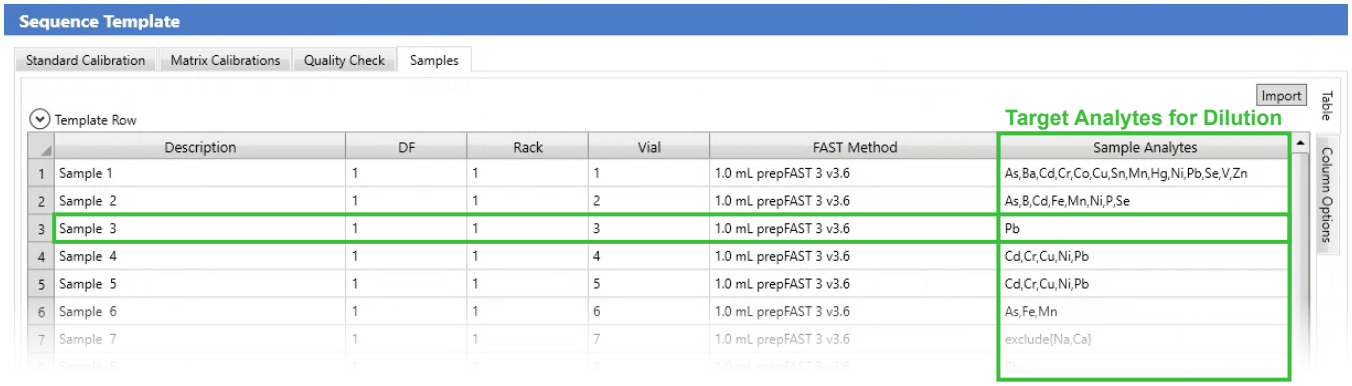
3 Autodilution occurs only if a targeted analyte exceeds defined limits

Learn More

LabSymphony software monitors sample signals in real-time during ICPMS analyses, triggering automated re-runs only when concentrations exceed specified ranges for targeted analytes. Users may choose pre-set dilution factors (e.g., 10x, 100x) for stepwise re-dilution or select intelligent dilution, in which LabSymphony intelligently calculates the optimal dilution factor for the sample.

Sample-specific Targeted Analyte Dilution

Sample-specific Targeted Analyte Dilution Lists in LabSymphony



	Description	DF	Rack	Vial	FAST Method	Sample Analytes
1	Sample 1	1	1	1	1.0 mL prepFAST 3 v3.6	As,Ba,Cd,Cr,Co,Cu,Sn,Mn,Hg,Ni,Pb,Se,V,Zn
2	Sample 2	1	1	2	1.0 mL prepFAST 3 v3.6	As,B,Cd,Fe,Mn,Ni,P,Se
3	Sample 3	1	1	3	1.0 mL prepFAST 3 v3.6	Pb
4	Sample 4	1	1	4	1.0 mL prepFAST 3 v3.6	Cd,Cr,Cu,Ni,Pb
5	Sample 5	1	1	5	1.0 mL prepFAST 3 v3.6	Cd,Cr,Cu,Ni,Pb
6	Sample 6	1	1	6	1.0 mL prepFAST 3 v3.6	As,Fe,Mn
7	Sample 7	1	1	7	1.0 mL prepFAST 3 v3.6	exclude{Na,Ca}

prep*FAST* 3 with LabSymphony software allows users to assign custom analyte lists to each sample. These lists define which elements are included or excluded in dilution checks, enabling precise, sample-specific dilution control based on calibration or user-defined limits. This ensures that only targeted analytes trigger dilution, reducing unnecessary re-analysis.

Automated Analyte-specific Dilution and Re-analysis

	Index	Arrived	Description	Pb208 (207.977)	Bi209 (208.980)
	1	☑	Blank	0.000	0.000
	2	☑	Std-1	1.029	1.001
	3	☑	Std-2	19.999	20.000
	4	☑	Sample 1	6.602	6.919
	5	☑	Sample 2	6.830	6.942
m	6	☑	Sample 3 *	951.152	6.240

Sample Details

Index	Arrived	Description	Pb208 (207.977)	Bi209 (208.980)
	YES	Sample 3 * Merged	951.152	6.240
6	YES	Sample 3 DF 1		6.240
7	YES	Sample 3 DF 200	951.152	

200x Targeted Pb Dilution

When a listed analyte's concentration exceeds its specified range, prep*FAST* 3 automatically triggers dilution and re-analysis based on user-defined thresholds. In this example, Sample 3 contained multiple elements above their respective calibration limits. However, since only lead (Pb) was included in the target analyte dilution list, prep*FAST* 3 selectively diluted the sample until Pb fell within range, disregarding non-target elements. This capability prevents unnecessary over-dilution, ensures accurate quantitation, and adapts dynamically to complex sample matrices.