



# SampleSense

Revolutionary New Valve for *FAST* and *prepFAST*

Automatically detects and injects the sample and triggers the ICP/ICPMS



## What Is SampleSense?

SampleSense is a fully automated sampling valve for ICP and ICPMS that provides:

- Active verification of sample loading
- Automatic triggering for analysis
- Full integration with Elemental Scientific autosamplers and *FAST* technologies

### Ease of Use

- Eliminate all sample uptake method development
  - No uptake delays required
- Change sample loop sizes without needing to alter method settings

### Intelligent Sample Verification

- Support small volume samples
- Minimize sample consumption
- Automatically load samples that vary in viscosities

### Productivity Enhancement

- Improve sample throughput by 2-5x with discrete sampling
- Reduce exposure of samples to instrument for lower required maintenance
- Reduce consumption of argon, power, and reagents



SampleSense SS7+ Valve



2DX Autosampler and *FAST* with SampleSense

## How Is SampleSense Unique?



### Viscosity Differences

One valve, one loop and one method for multiple sample types. SampleSense accounts for viscosity and automatically adjusts timing.



### Time Savings

Operator time for sample introduction method development is eliminated. Just run samples.



### Sample Savings

The sample is injected at precisely the right time. Every time. Even for small samples.

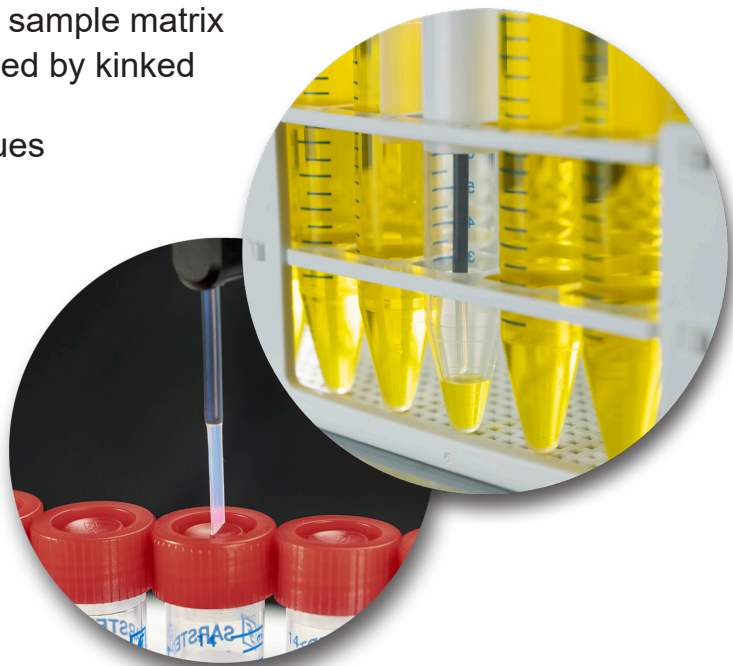


### Error Notification

Incomplete sample loading or bubbles in the sample are detected and logged.

SampleSense technology also provides these capabilities:

- Optimized loading conditions for each sample matrix
- Automatic compensation for drift caused by kinked lines or partial blockages
- Monitors and logs sample loading issues caused by:
  - Empty tubes or positions
  - Capped vials
  - Empty standard or QC
  - Bubbles present in sample loop



## FAST with SampleSense

FAST has been trusted for over a decade in thousands of ICP/ICPMS laboratories worldwide.

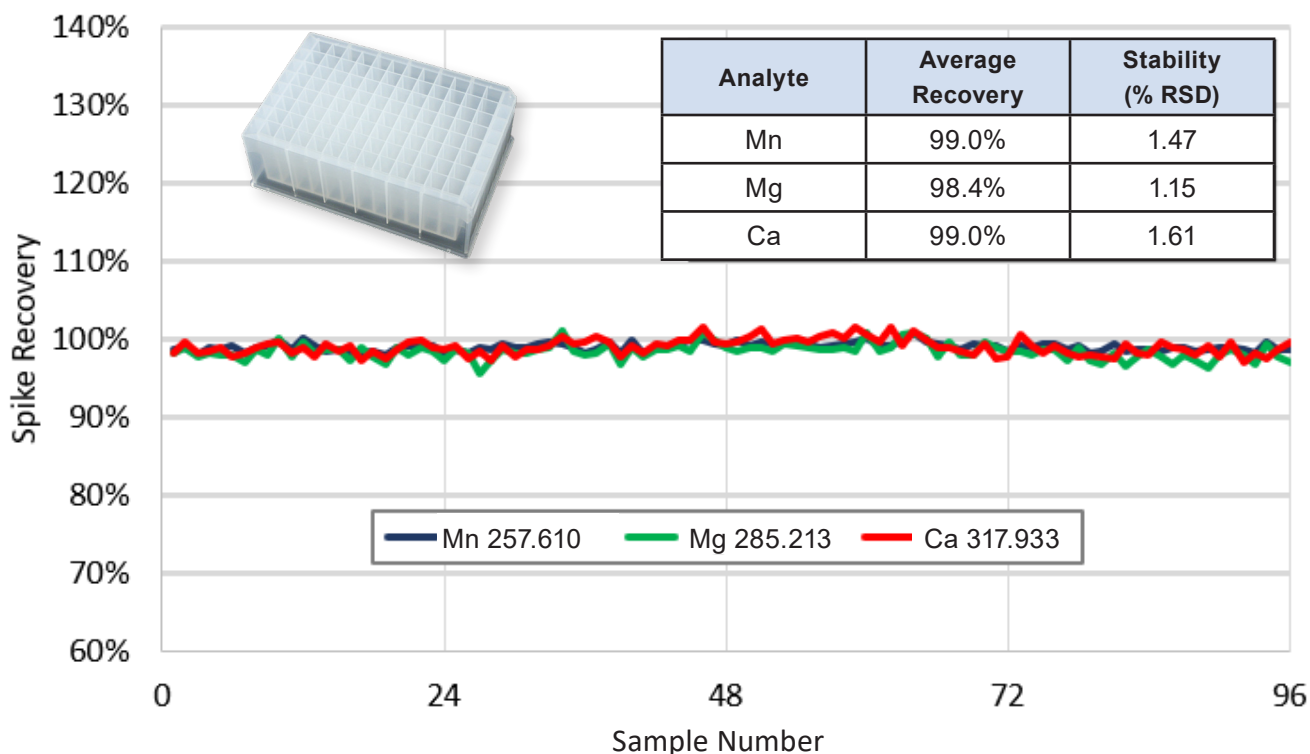
FAST is a valve injection automation system with rapid vacuum sample loading that more than doubles sample throughput, saves time, reagents and utilities.

Combining FAST with SampleSense provides an even higher level of automation, ease-of-use and sample throughput. Liquid samples are instantly detected, injected and the analysis is triggered automatically.



FAST valve module with SampleSense

### FAST with SampleSense – Small Volume Sample Loading from 96 Well Microtiter Plate



**Figure 1.** FAST with SampleSense demonstrating support for small volume samples. 96 well microtiter plate positions were filled with 750  $\mu$ L of a 1 ppm QC standard and then loaded utilizing SampleSense into 250  $\mu$ L sample loop. Excellent reproducibility exhibited for automated loop loading with SampleSense on ICP-OES system.

## prepFAST with SampleSense

prepFAST is an automated inline dilution system for ICP/ICPMS sample introduction.

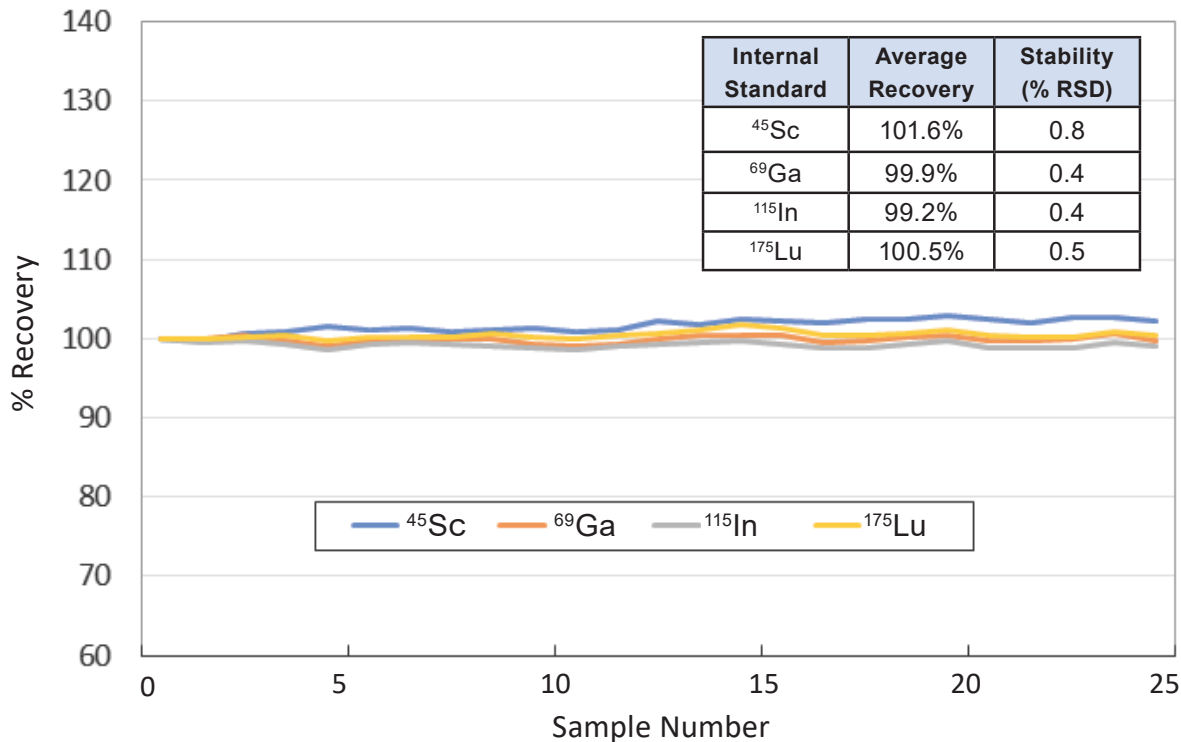
The high-throughput prepFAST system eliminates manual dilution, reduces reagent usage and improves laboratory productivity.

SampleSense integrates fully with the prepFAST for an even higher level of automation and ease-of-use.



prepFAST valve module with SampleSense

### prepFAST with SampleSense – Viscous Sample Loading of Concentrated Sulfuric Acid

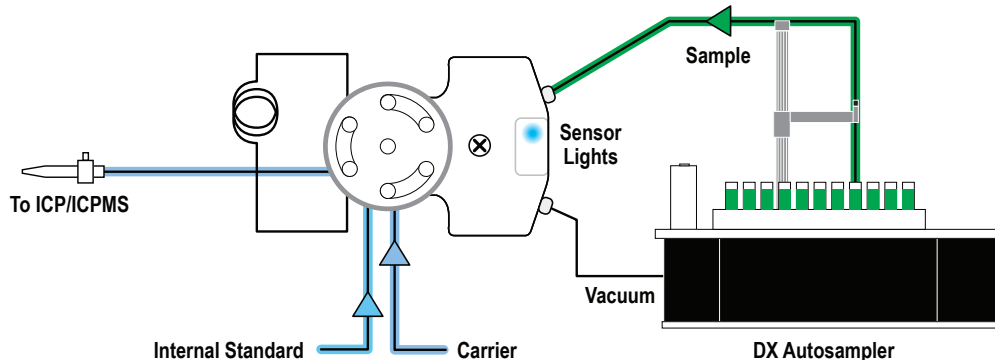


**Figure 2.** prepFAST with SampleSense for viscous sample loading. Concentrated sulfuric acid ( $H_2SO_4$ ) was loaded without dilution into a 1.5 mL sample loop, then immediately diluted online 50x with prepFAST. The  $H_2SO_4$  was automatically determined by SampleSense to require 100 sec to fully load the sample loop; water only requires 8 seconds. Results are from analysis by ICPMS over 2.5 hours showing excellent stability in this highly viscous matrix as displayed by the internal standard species.

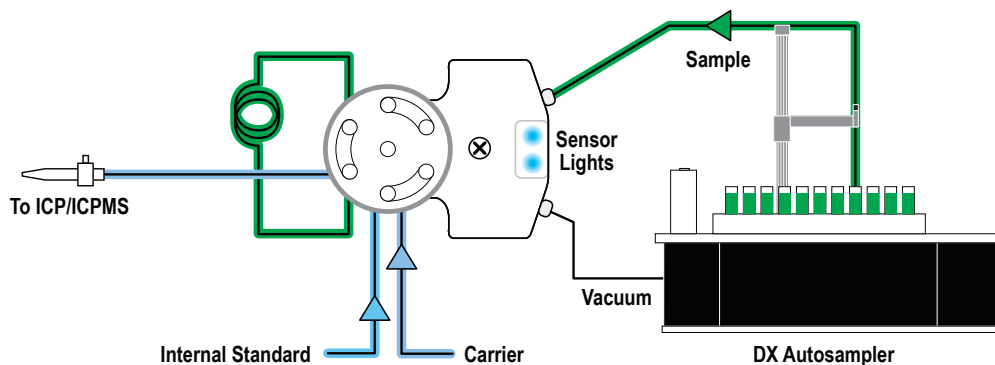


## Automated SampleSense Operation for FAST

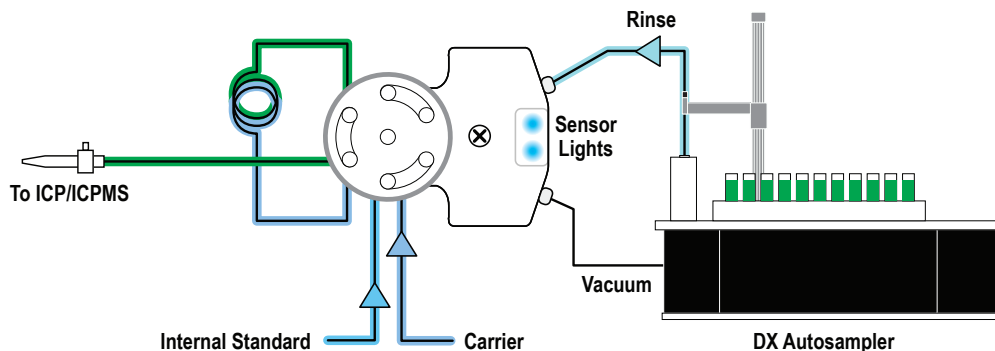
### 1. Initiate Sample Loading – Inlet Sensor Activated



### 2. Sample Loading Complete – Exit Sensor Activated



### 3. Sample Analysis Automatically Triggered by SampleSense

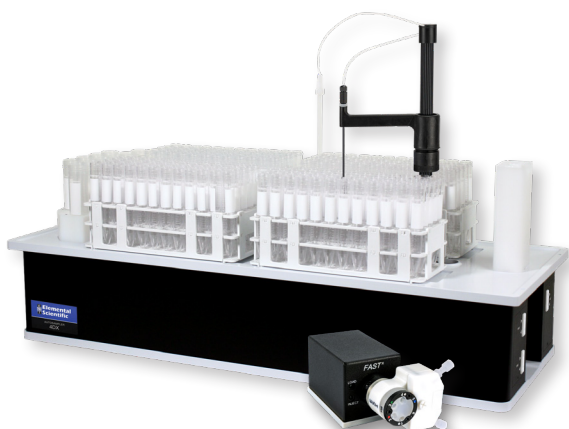


\*Note: prepFAST sample loading follows the same process as shown above

## FAST Systems with SampleSense

SampleSense is exclusively available for *FAST* Technologies

- Completely automate the entire sample introduction process
- Eliminate method development for sample uptake
- Dynamically optimize sample loading
- Automatically trigger ICP/ICPMS data acquisition



4DX Autosampler and *FAST*  
with SampleSense



2DXCi Autosampler and prep*FAST*  
with SampleSense

***The only sample introduction valve on the market  
with optical sensor technology.***



© Elemental Scientific | 7277 World Communications Drive | Omaha, NE 68122  
Tel: 1-402-991-7800 | [sales@icpms.com](mailto:sales@icpms.com) | [www.icpms.com](http://www.icpms.com)

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