A New Technology, Energized Dispersive Extraction, for Rapid, Simple, and Efficient Sample Preparation

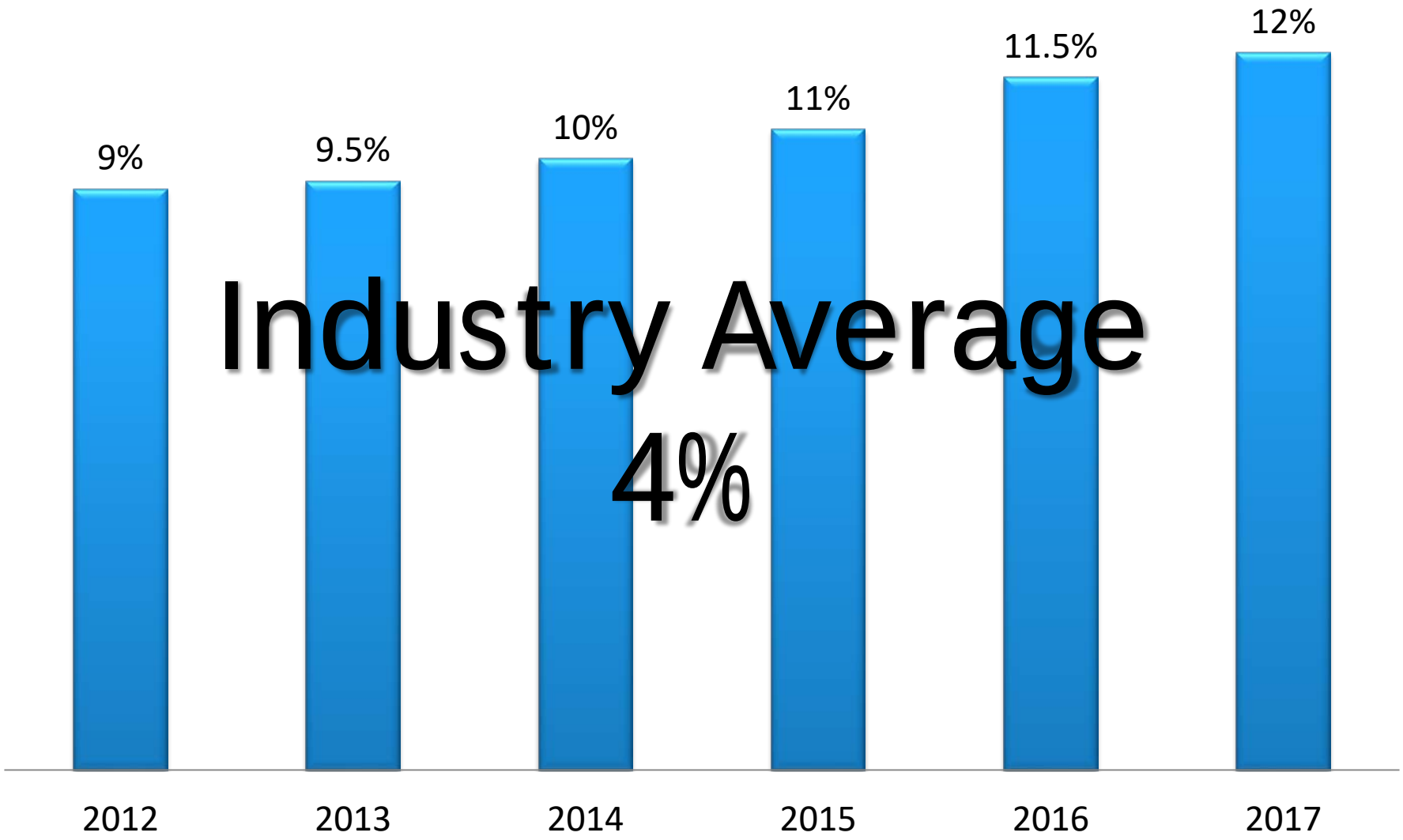
A Science-Based Technology Company

- At CEM, We Simplify Science
- Our passion is to transform markets with disruptive technologies that make things **faster, simpler**, and **smaller** to use…
- 30 years ago CEM **transformed** the world of sample prep for elemental analysis with **microwave digestion**…
- Today we will do the same with a new breakthrough technology for **molecular analyses**.

CEM CORPORATION

HEADQUARTERS

R&D Investment



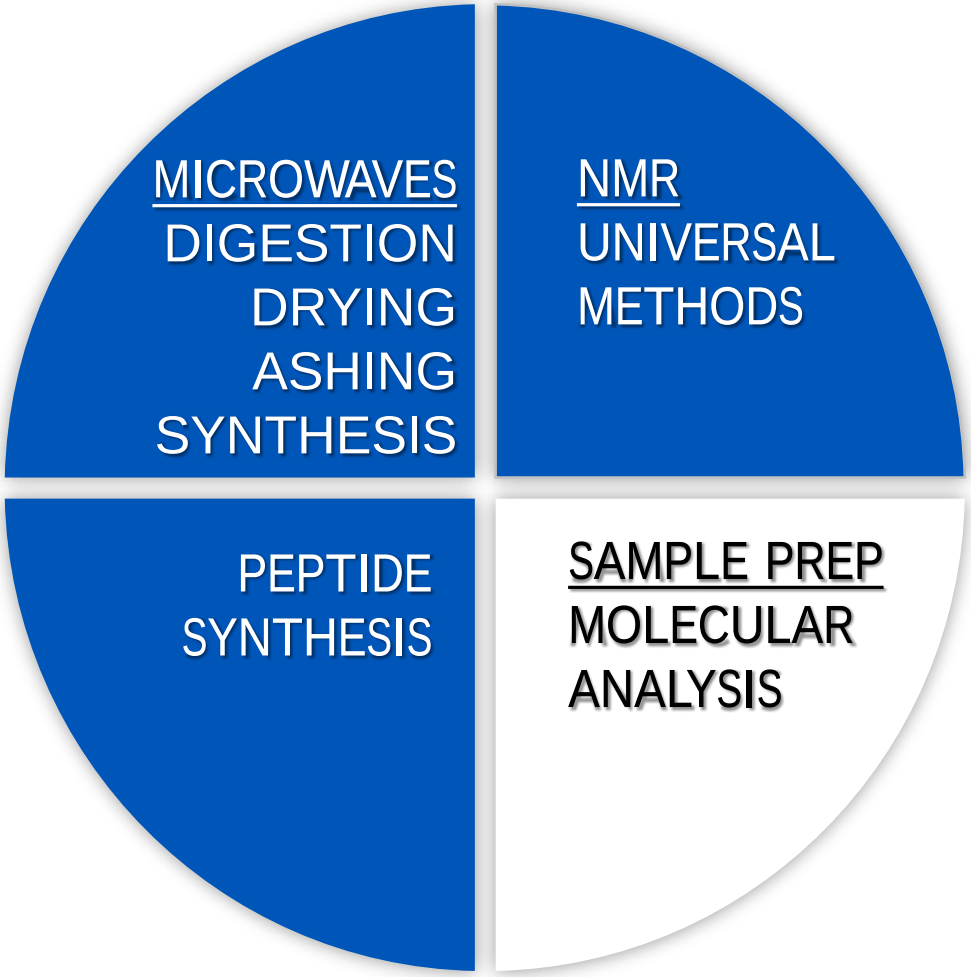
CEM Expansion


EXIT
Panasonic

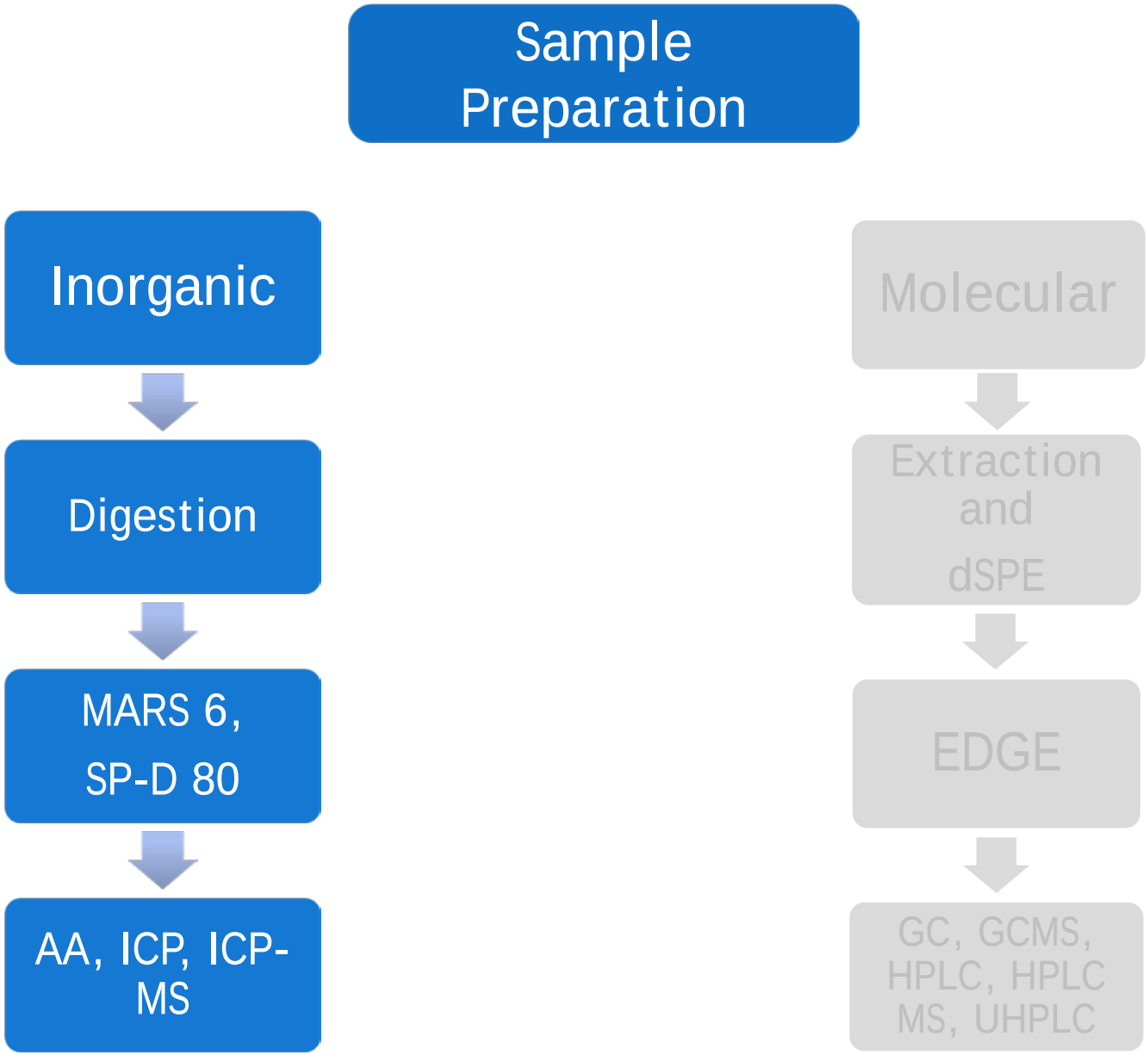

B3
B4

CEM CORPORATION

Core Technologies



Analytical Division

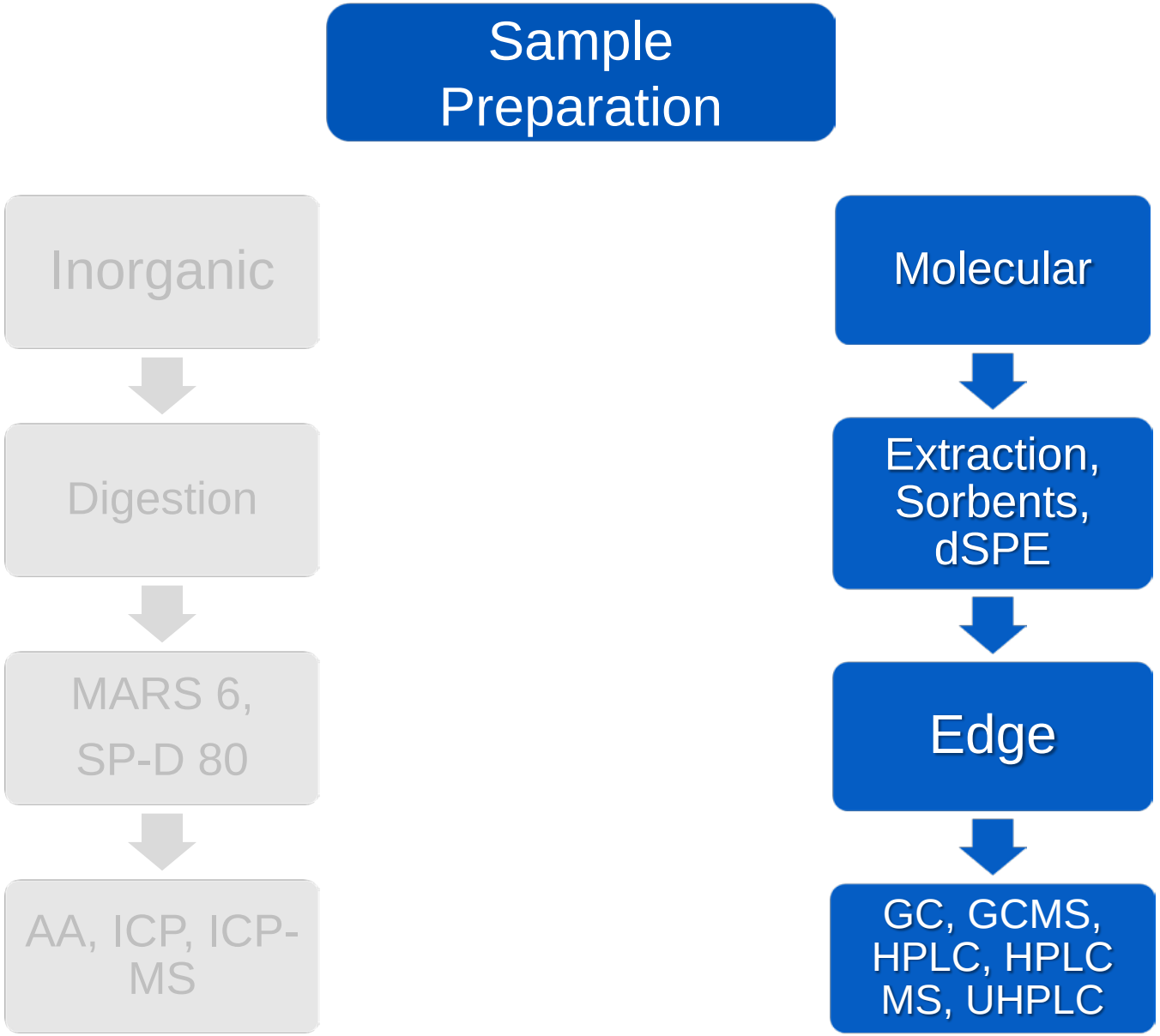


The Inorganic Line-up

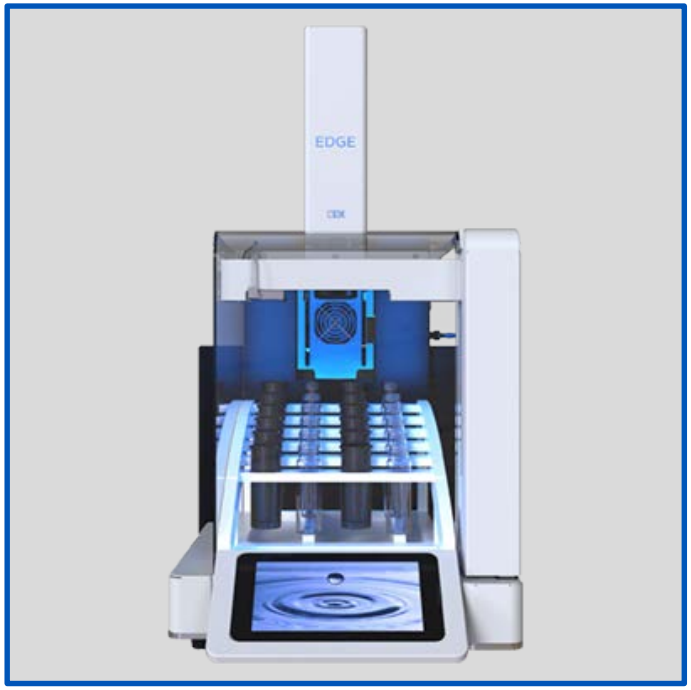
SP-D
Automated Sequential

MARS 6
Manual Batch

Analytical Division



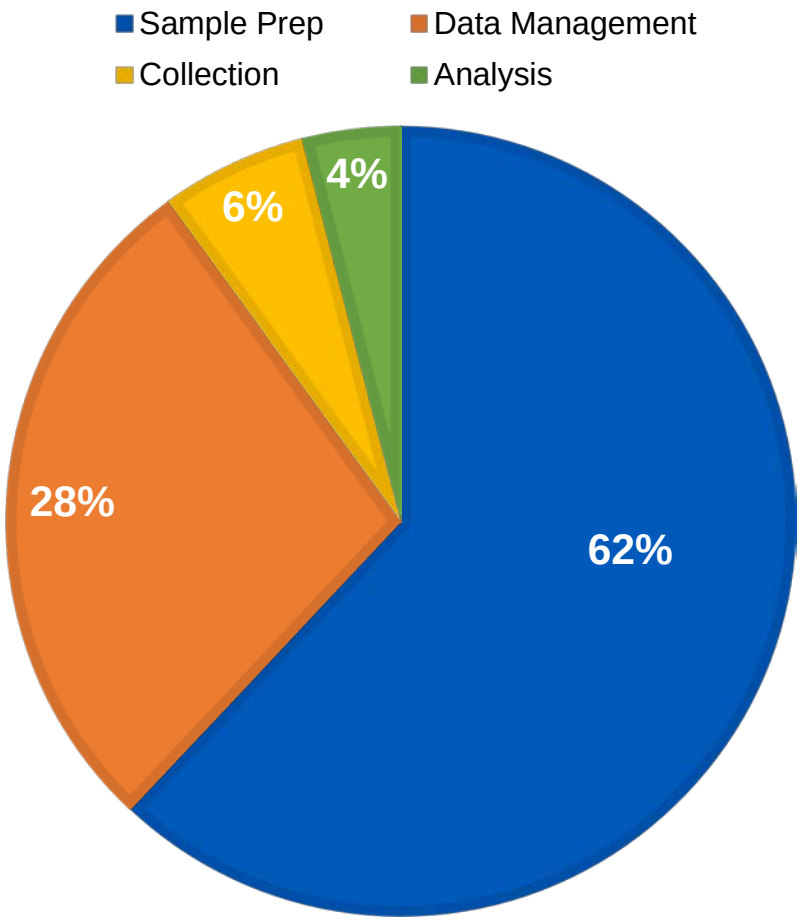
The Molecular Line-up



EDGE

Sample Preparation is the Bottleneck

Time Spent on Typical Chromatographic Analysis



R.E. Majors, LC/GC Magazine

Sample Preparation Techniques

- Microwave Extraction
- QuEChERS
- Pressurized Fluid Extraction
- Soxhlet
- Automated Soxhlet
- Solid Phase Extraction (SPE)

Limitations

- Time consuming
- Use large amounts of solvent
- Costly
- Tedious preparation required

Q-Cup Technology combines the processes of **Pressurized Fluid Extraction** and **Dispersive Solid Phase Extraction** into one instrument.

EDGE Breaks the Bottleneck Barrier

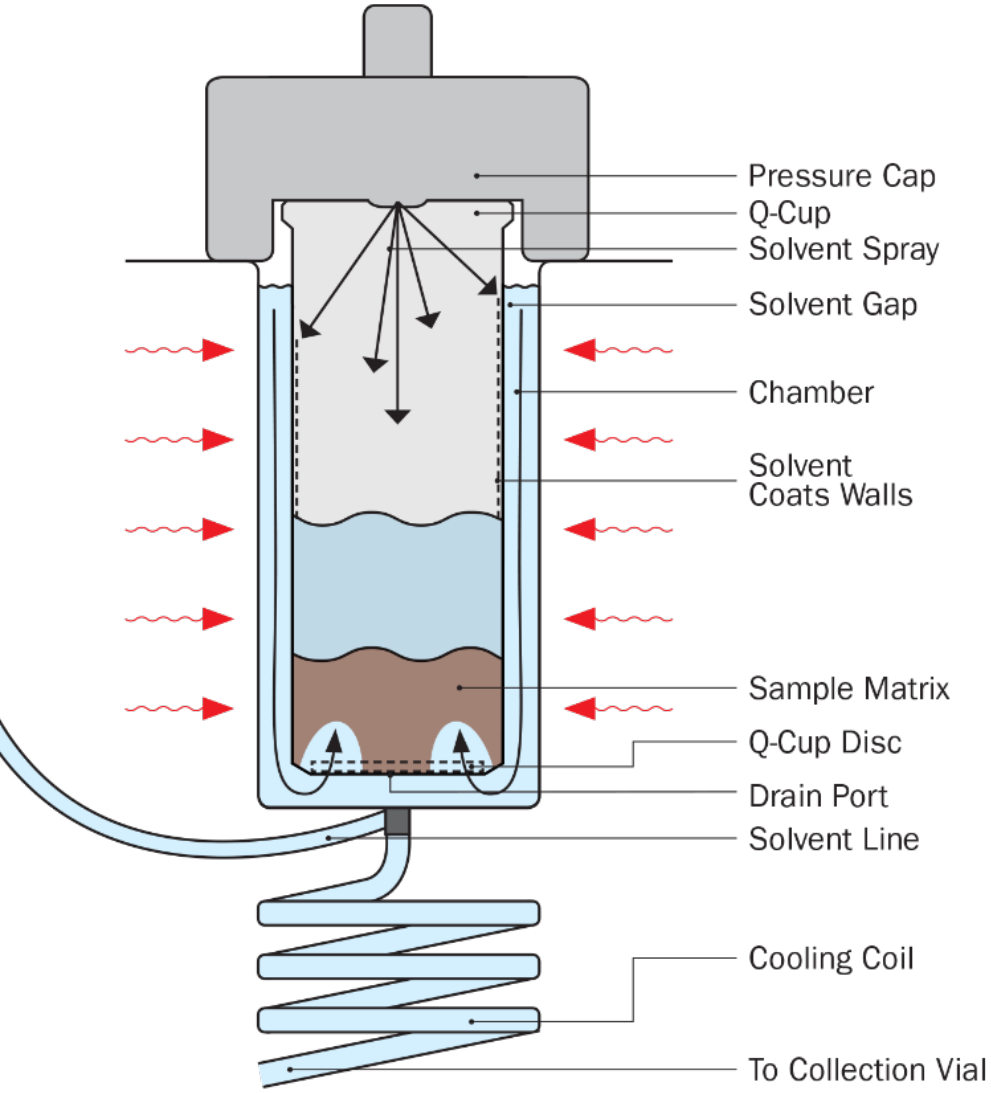
•5 minutes	✓Fast
•30 mL	✓Solvent reduction
•12 samples/hr	✓Throughput
•Compact	✓Size
•Moderate cost	✓Cost
•Filtered samples	✓Filtration

Energized Dispersive Extraction

High Throughput - 48 samples/hr. (Four Systems)

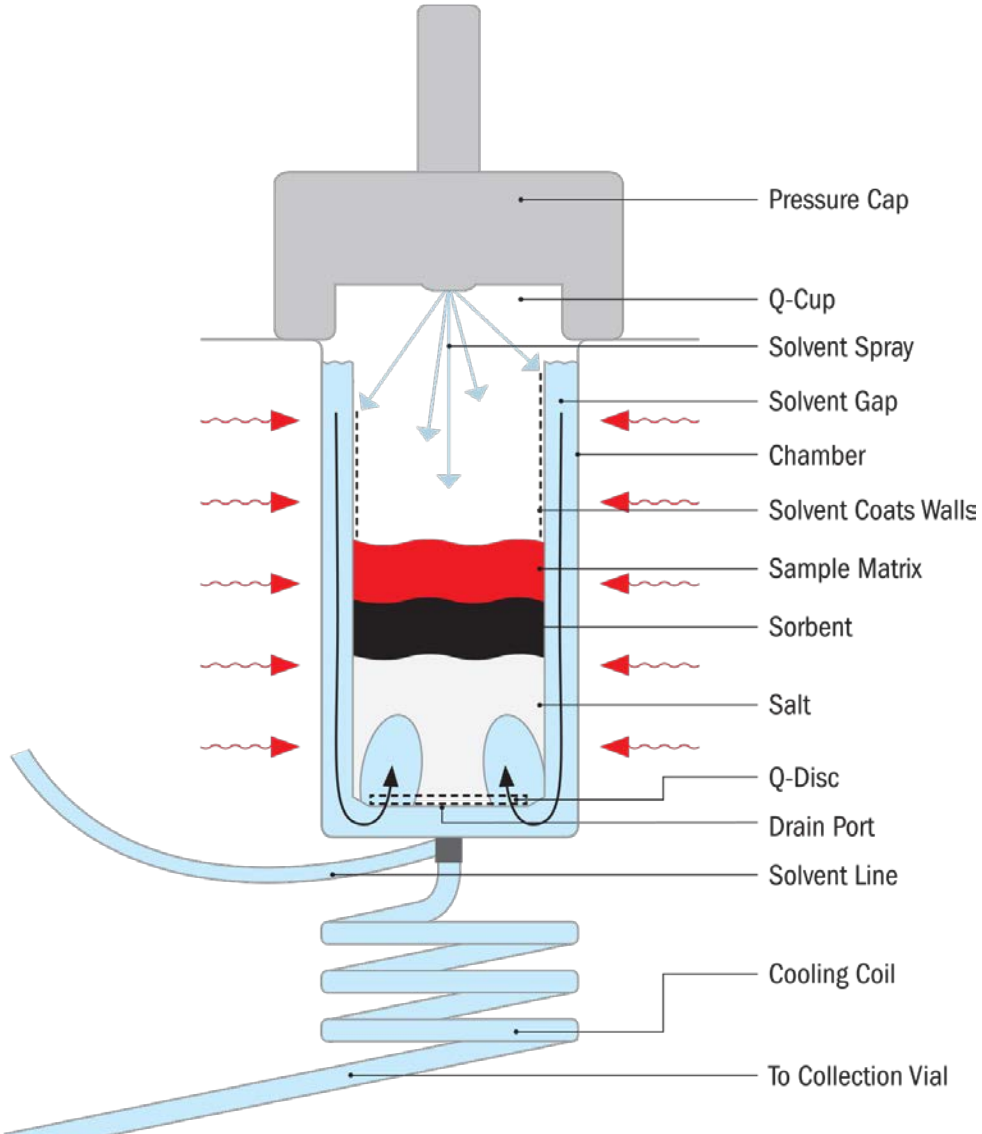
Q-Cup Technology

Q-Cup Technology

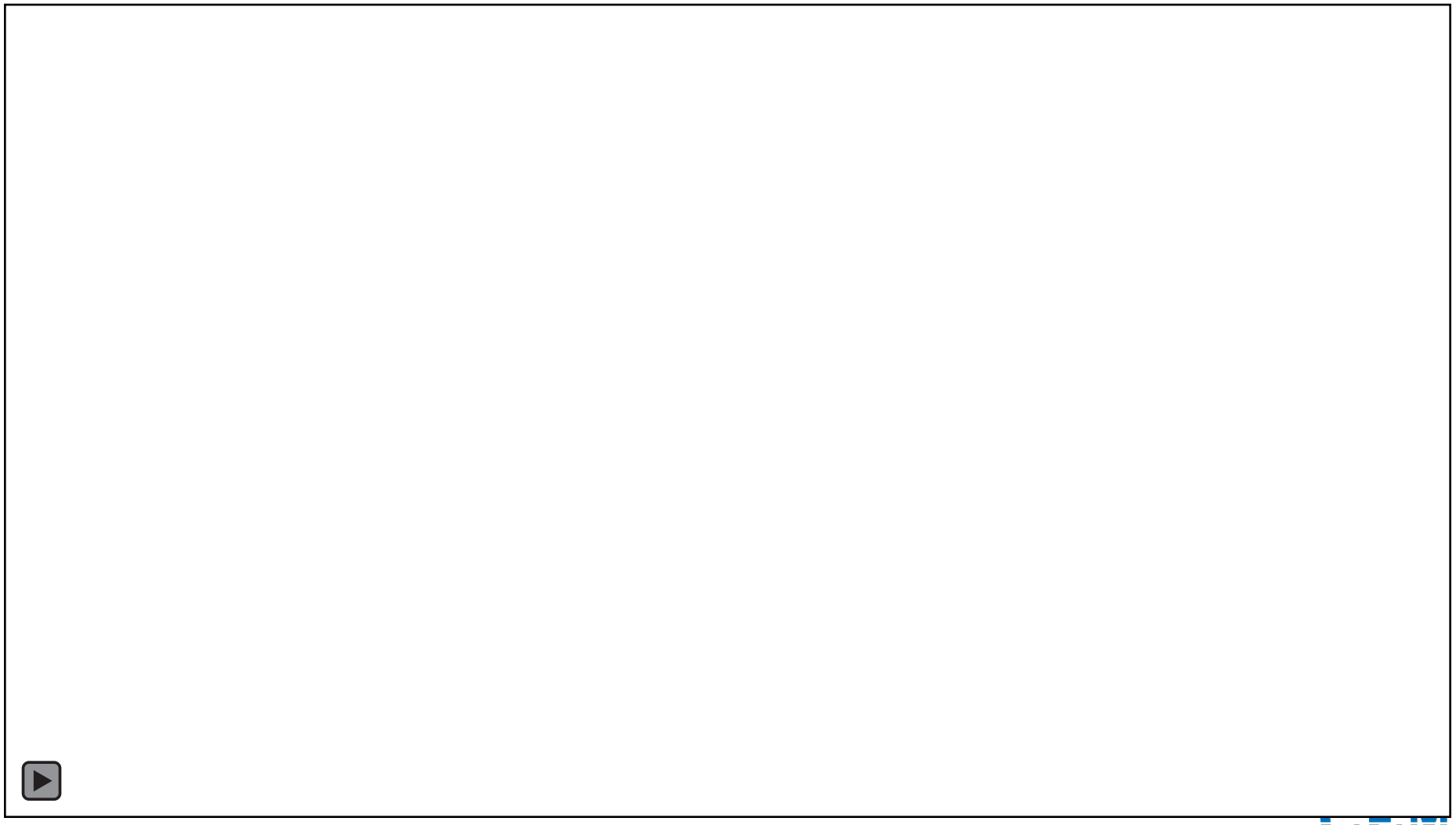


- Q-Cup within a pressurized chamber
- Open Cell creates dispersive effect
- Promotes rapid extraction and filtration
- Provides filtered and cooled solvent solution ready for analysis or concentration

Example of Sorbent use in EDGE



Video of complete run



6 Times Faster

12 Samples/hr

Includes extraction, rinsing, filtering, cooling & washing

No Carryover

Technique	Time (minutes)	Solvent Usage (mL)	Cost [1]
EDGE	5	30	$
QuEChERS	30	30	$
Pressurized Fluid Extraction	30	35	$$$
Soxhlet	360	150	$$
Automated Soxhlet	120	90	$$$
Ultrasonic	60	300	$$

[1]Includes instrument cost and running cost

Extraction Needs

Environmental

Foods

Personal Care Products

Pharmaceuticals

Polymers

Consumer Products

EDGE Team

Scientists

- Michael J. Collins, PhD (team leader)
- Alicia Stell, PhD
- Brittany Leffler
- Candice Olsson

Engineers

- Joseph Lambert
- Paul Elliott
- David Hanisch
- Mohammad Moammer
- Matt Beard
- Christy Davidson
- Ben Khounsombath