

CEM

Your partner in academic research and teaching.

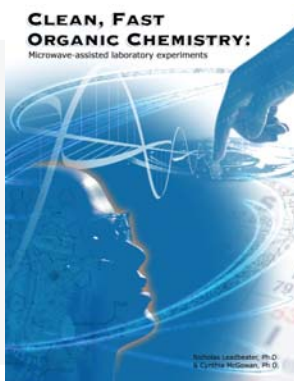
CEM is a company driven by scientists and their vision. As such we understand the challenges facing today's academic researchers and students. We are committed to support educational initiatives aimed at helping students and professors achieve outstanding results in their laboratory.

CEM Academic Solutions

Microwave Synthesis Systems, Teaching Material & Funding Opportunities for Graduate Research and Undergraduate Instruction

Undergraduate Teaching Manual

Clean, Fast Organic Chemistry: Microwave-Assisted Laboratory Experiments, the new undergraduate lab manual written specifically for teaching microwave chemistry by Professors Nicholas Leadbeater, PhD, and Cynthia McGowan, PhD, provides complete laboratory procedures and discussions for 11 organic chemistry experiments. Help your students learn the hi-tech methods and more complex chemistries that they will be using after graduation, including multi-step and multi-component reactions that you currently cannot teach due to time restrictions!



CEM Microwave-Enhanced Chemistry Grant

Provides professors active in research and/or teaching who wish to include microwave-enhanced chemistry in their program the opportunity to receive awards for new CEM microwave systems and accessories: up to \$4,000 for new research systems, up to \$2,000 for teaching systems, and up to \$1,500 for accessories or upgrading current CEM instrumentation.

MJ Collins Award

The MJ Collins Award recognizes outstanding research by a student in the field of microwave chemistry and is open to undergraduate, graduate, doctoral, and post-doctoral students attending academic institutions in the US. The winning student will receive a cash prize of \$2,500 with matching funds presented to the academic sponsor as well. Consult the CEM website for more information.



Benchtop Microwave Reaction Systems

Accelerate learning with the MARS^{TA}

MARSTM

Multimode Microwave Synthesis System

The CEM MARSTM Synthesis System is the perfect solution for teaching organic chemistry in the undergraduate chemistry laboratory. Using patented waveguide technology, it delivers the most uniform field of any multimode system available. In fact, it is the only multimode microwave reaction system to have won the prestigious R&D 100 Award.

The MARS Synthesis System will process up to 24 samples simultaneously in under 10 minutes, allowing you to focus your lab on complex multi-step reactions or on purification and identification of compounds. Step-by-step procedures for 11 undergraduate experiments using the MARS System are featured in the new lab manual, *Clean, Fast Organic Chemistry*.

Perform up to 24 reactions simultaneously in 10 minutes or less

Rugged GlassChemTM vessels use simple screw cap design – no tools needed

Waveguide energy distribution system ensures the highest and most reproducible yields

Accepts wide variety of accessories for scale up, high-temperature chemistries and proteomic applications

Use off the shelf glassware to perform temperature controlled atmospheric reactions up to 1L

NEW!



Engineered for use in the academic lab, CEM's new GlassChemTM vessels are simple to assemble, yet rugged enough to run reactions at temperatures up to 200 °C under pressurized conditions.

The easy-to-use software accurately monitors and controls the temperature of the reaction. Simply enter the desired temperature, ramp time and hold time. MARS does the rest! The software also allows the pre-programming of methods for one button operation.



Vessel Options for the MARS Synthesis System

Vessel Type	Max. number of vessels per run	Volume	Max. Temp. (°C)	Max. Pressure (psi)
Open flask	1	Up to 1L	Reflux	----
GlassChem	24	20 mL	200	200
GreenChem	14	100 mL	200	200
XP-1500 Plus	12	100 mL	300	800

Discover the flexibility of Focused microwave synthesis.

Discover
Focused Microwave Synthesis

The Discover[®] line of FocusedTM Microwave Synthesis Systems combines unmatched versatility and award-winning performance in the most affordable, compact, and easy-to-use platform available. CEM's signature Focused Microwave technology and patented cavity design provide optimum coupling efficiencies, reducing reaction times and decreasing side reactions. Especially well-suited for Green Chemistry procedures, Discover systems provide a cleaner alternative to traditional organic chemistry.

CEM's Discover BenchMateTM is the entry level system with features typically found on higher-priced equipment. It accommodates both atmospheric (up to 125 mL round-bottom flask) and pressurized reaction vessels. With a temperature range of ambient to 300 °C, Discover systems cover the largest range of chemistries. Best of all, Discover offers versatility that is affordable. As the only truly modular platform for microwave synthesis, the Discover System is easily upgradeable with a wide range of options including automation, low-temperature (to –80 °C) chemistry, peptide synthesis, and scale-up.

The new Discover S-ClassTM redefines expectations for leading performance. Advanced technology and best-in-class features make it the microwave synthesis system of choice for research. The S-Class performs pressurized reactions in both 10-mL and 35-mL glass vials and provides fully automated pressure control. As with all Discover systems, the S-Class accepts all of the line's options and accessories, and also expands the automation capabilities to include both a 48- and 96-position autosampler.



Perform atmospheric (up to 125-mL flask & pressurized 10-mL reactions)

Vials employ easy-to-use snap on caps – no need for crimping tools

Temperature and pressure control

Temperature range from ambient to 300 °C

Easily upgradeable with modular options

	BenchMate	S-Class
Atmospheric reactions	X	X
Temperatures to 300 °C	X	X
Stirring	X	X
Pressure management	X	X
Pressure control		X (fully automated)
Pressurized vessel capabilities	10 mL	10, 35 mL
Scale up option	X	X
Low-temperature option	X	X
Peptide synthesis option	X	X
Automation options	24-position	48-, 72- & 96-position
Camera option		X