

THE LATEST in
MICROWAVE SYNTHESIS
TECHNOLOGY

 Discover[®]



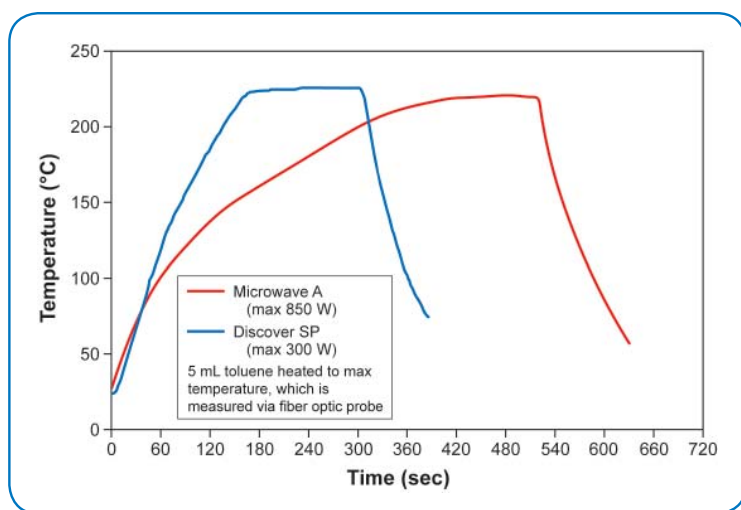
CEM

Microwave-Enhanced Synthesis

THE BEST-SELLING MICROWAVE SYNTHESIS PLATFORM takes another leap forward with Discover SP. This new system has all of the features for which the Discover series is known, plus an enhanced heating capability, and CEM's new ActiVent Technology, all in one compact simple-to-operate system. As the most advanced technology designed for microwave synthesis, the Discover SP provides superior flexibility with easily interchangeable accessories that enable you to customize a system so you can do your chemistry, your way!

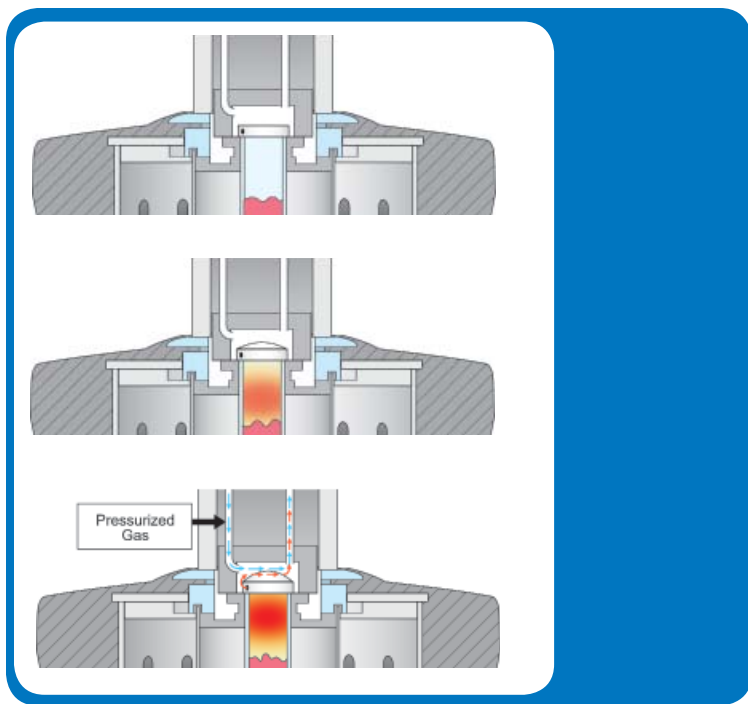
ENERGY EFFICIENT

Why use more power than you really need? Instead of following the conventional approach of applying more power to heat reaction mixtures more rapidly, we improved the cavity of the Discover SP and made it even more efficient. This enhancement gives the Discover SP the best heating cavity using the least amount of microwave power input.



INNOVATIVE ENGINEERING FOR SIMPLE OPERATION

Discover SP is engineered for superior performance. Intuitive software and quick programming make Discover SP the easiest to operate microwave synthesis system you'll ever use.



SUPERIOR DESIGN FOR SIMPLE OPERATION

CEM's patented ActiVent caps for pressure vials offer a secure seal without the need for crimping tools .

New! ActiVent™ Technology

Control your reaction in more ways than ever before!

CEM's patented ActiVent™ Technology is the latest advance in automated pressure control and the safest way to perform pressurized reactions. The ActiVent pressure control system was designed to work exclusively with ActiVent vessels and caps to give you greater flexibility in pressure control and optimum results.

Vent as your reaction progresses or after it is complete

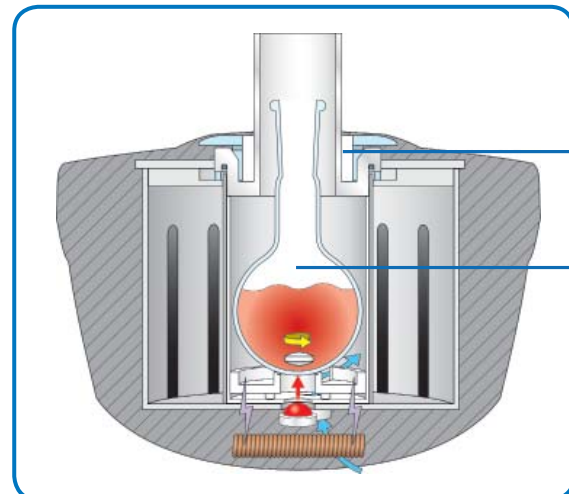
- Perform high temperature/high pressure reactions using either parameter to safely and effectively control the reaction without venting.
- Automatically program the system to release a gaseous byproduct as it forms.
- Ultimate programmability for your reaction. Any material that is released is vented safely through exhaust tubing to a location specified by you.

Vent more effectively during a reaction

- Release unexpected pressure quickly and safely, allowing the reaction to proceed to completion.
- Safely remove unneeded gaseous by-products and help shift the equilibrium of your reaction to generate more product, quickly.
- Perform the reaction in a completely sealed environment.
- Generate a gas in-situ and consume it as a normal reagent. ActiVent safely releases the pressure after the reaction is complete without intervention.

It's your choice!
Your chemistry, your way!

DISCOVER SP IS THE ONLY SINGLE-MODE MICROWAVE SYNTHESIS SYSTEM CAPABLE OF ALSO PERFORMING OPEN VESSEL REACTIONS. USE WITH OR WITHOUT A REFLUX CONDENSER.



Open Vessel Attenuator

Use round-bottom flask up to 125-mL

Durable Design

An advanced membrane design and specially formulated coating protects parts from solvents and reagents.

ActiVent™ Pressure Device

Self-Tuning Cavity

takes all of the guesswork out of ensuring that your reaction is positioned correctly every time, no matter which vessel you use. As the reaction progresses, the microwave energy distribution adjusts automatically for optimum performance and reproducibility.

Focused Microwave Cavity

is the core of the Discover System. Built around the largest single mode cavity available, the Discover System provides the ultimate flexibility in reaction selection and vessel compatibility.

Volume Independent IR Temperature Sensor

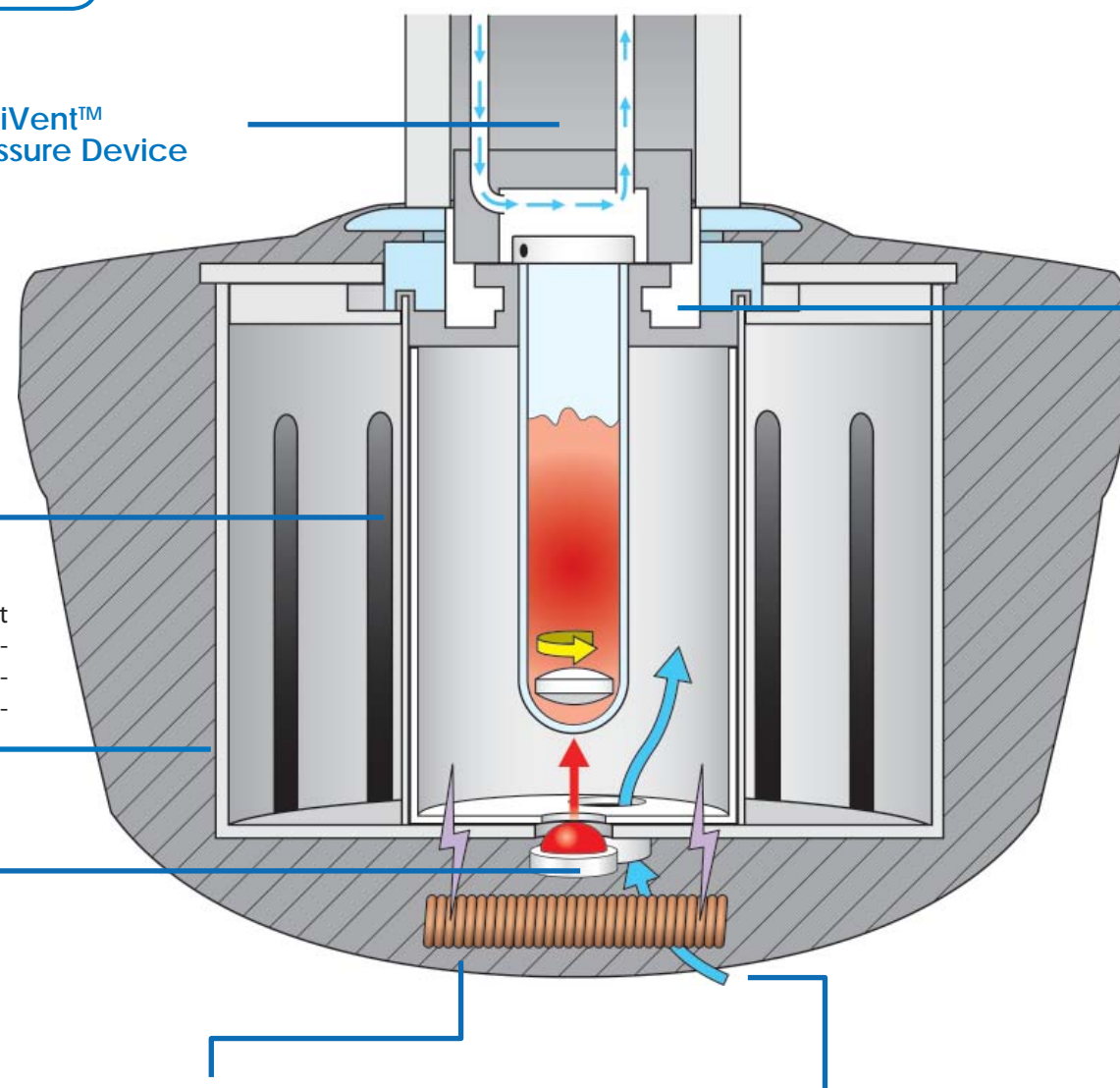
provides the simplest means to measure the temperature in a reaction in a non-invasive manner. No need for multiple reaction vessels or large minimum volumes with the IR mounted on the bottom!

Electromagnetic Stirring

to ensure maximum agitation for your reaction mixture. Adjust the speed to guarantee your sample mixes each and every time.

Air Cooling for Simultaneous Heating and Reaction Quenching

quickly reduces the overall reaction temperature to quench the reaction upon completion. Air cooling is also the critical component behind PowerMAX™ Technology.



EASIEST-TO-USE VESSELS

YOU CAN'T GET ANY EASIER THAN CEM'S ActiVent™ CAPS.

NO TOOLS REQUIRED!



Perform either **pressurized** or **non-pressurized** reactions



10-mL flow cell



80-mL vessel



CoolMate vessel

Open Vessel

Discover SP is the only single-mode microwave synthesis system that allows you to perform open vessel reactions using standard laboratory glassware and condensers. Discover SP accepts up to 125-mL round-bottom flask and allows reagent addition and overhead stirring.



Simple Integrated Attenuator Design

allows full access to the Discover cavity to simplify cleaning process and provide the ultimate flexibility in vessel selection.

Easiest to Clean

Discover SP is designed with a removable spill cup, as well as a drain tray for easy clean up. There's nothing to disassemble, just clean out the cup and the tray and you're ready to run another reaction.

PowerMAX™ Simultaneous Cooling

maximizes the benefits of microwave energy. One of the reasons microwave energy works so well for driving synthetic reactions is because it heats kinetically, not thermally. Localized superheating raises the temperature of the reactant mixture, but energy is actually transferred kinetically. CEM's patented PowerMAX technology uses compressed gas to cool the reactant mixture while simultaneously applying more energy than would normally be used. Reactions proceed much more quickly than normal and do not have time to form side products. This technology is ideal for reactions that require a substantial amount of energy, but may be temperature-sensitive.

EXPLORER SP AUTOMATION

Optimize your reactions and expand the capabilities of your laboratory without expanding your lab space! Explorer modules for the Discover SP platform provide fully automated reaction handling capabilities and are an ideal solution to support small groups of chemists as a shared resource.



Explorer 12

All of the benefits of a large format autosampler within the footprint of the world's smallest manual reactor. This twelve position autosampler accommodates both the 10- and 35-mL vessels and is the best value of any autosampler commercially available.



Explorer 48, 72, & 96

CEM manufactures autosamplers to accommodate both 10- and 35-mL sealed vials. Run either size or a combination of both easily! Intelligent rack design allows the autosampler to recognize the vial type without user input and the integrated robotics ensure that switching between 10-mL and 35-mL reaction vials occurs seamlessly, freeing your time for other things.

	10-mL Vials	35-mL Vials
Explorer 48	Up to 48	Up to 24
Explorer 72	Up to 72	Up to 36
Explorer 96	Up to 96	Up to 48

Mix and match reaction vial sizes for the ultimate in flexible reaction setup!

SPECIFICATIONS

HEATING RATE	2-6 °C/second
TEMPERATURE	-80 to 300 °C
PRESSURE	Operate: 0-27 bar (0-400 psi) Control: 0-21 bar (0-300 psi) ActiVent Self-Venting Technology included for pressure relief during or after reaction
REFLUX REACTION COMPLIANT	Open Vessel option included for reflux reactions
POWER	0-300 W
TEMPERATURE MEASUREMENT	Infrared for volume-independent non-invasive temperature measurement Fiber optic probe for direct feedback
OPERATING VOLUME	0.2 – 75 mL 0.2 – 50 mL pressurized
REACTION AGITATION	Electromagnetic stirring with adjustable speeds
AIR COOLING	≥25 psi (20 L/min flow) user-supplied For Simultaneous Cooling (PowerMAX) and reaction quenching
AUTOMATION	12-position [up to 12 (10 mL) vials or 6 (35 mL) vials] 48-position [up to 48 (10 mL) vials or 24 (35 mL) vials] 72-position [up to 72 (10 mL) vials or 36 (35 mL) vials] 96-position [up to 96 (10 mL) vials or 48 (35 mL) vials]
AVAILABLE ACCESSORIES	Camera Sub-ambient reactions (CoolMate Sub-Ambient Microwave System) Gas Addition kit Flow Cell Peptide Synthesis Enzymatic Digest
WEIGHT	38 lbs. (17.3 kg)
DIMENSIONS	14.2"W x 16.9"D x 11.2"H (36.1 cm x 42.9 cm x 28.4 cm)

CEM Corporation

World Headquarters
PO Box 200
Matthews, NC 28106

Toll-free: (800) 726-3331 [US & Canada]
Tel: (704) 821-7015
www.cem.com
info@cem.com

SUBSIDIARIES

UNITED KINGDOM

CEM Microwave Technology Ltd.
2 Middle Slade
Buckingham Industrial Park
Buckingham MK18 1WA
United Kingdom
Tel: +44 (0) 1280 822873
e-mail: info.uk@cem.com

GERMANY

CEM GmbH
Carl-Friedrich-Gauss-Str. 9
47475 Kamp-Lintfort
Germany
Tel: +49 (0) 2842 9644
e-mail: info@cem.de
web: www.cem.de

FRANCE

CEM µWave S.A.S.
Immeuble Ariane
Domaine Technologique de Saclay
4, rue Rene' Razel
91892 ORSAY Cedex
France
Tel: +33 01 69 35 57 80
e-mail: info.fr@cem.com
web: www.cemfrance.fr

ITALY

CEM SRL
Via Dell Artigianato, 6/8
24055 COLOGNO AL SERIO (BG)
Italy
Tel: +39 035 896224
e-mail: info.srl@cem.com