



# Amino Acid Hydrolysis

Microwave Technology to Accelerate Your Reaction



Discover 2.0 — Microwave Synthesizer

---

iWave® Sensor Technology

---

Custom Microwave Methods

---

CEM

Discover 2.0

Method 1 of 1  
Experiment 1

132 °C

101 PSI

200 W



132 °C

STAGE 1 of 1

TIME 00:02:03

RAMPING

POWER 200 W

PRESSURE 101 PSI



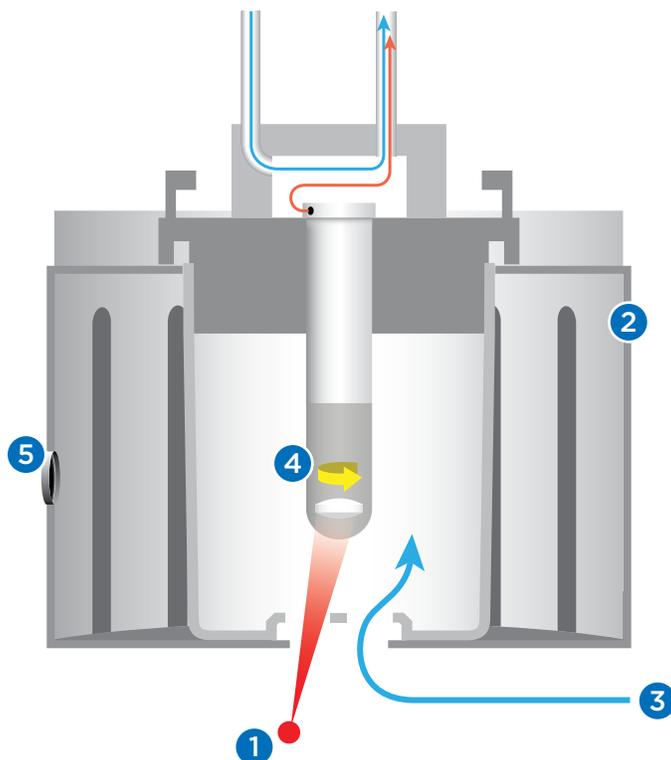
RAMPING

Stage 1 of 1  
00:02:03



# Accelerate Your Reaction

The Discover 2.0 uses microwave technology to hydrolyze proteins and peptides, resulting in improved control of hydrolysis conditions with better accuracy, reproducibility, speed and robustness. Featuring intuitive software with a 10" touchscreen interface, it is possible to program a reaction in seconds and achieve reproducible results in as little as 15 minutes.



## 1 iWave®— True Internal Temperature Sensor

Revolutionary, patented, floor-mounted temperature sensing provides volume-independent and in-situ temperature measurement without delicate thermocouples. This design ensures the most accurate temperature measurement and widest chemistry flexibility with the lowest cost of ownership.

## 2 Self-Tuning, Efficient Microwave Cavity

Take the guesswork out of ensuring the reaction is positioned correctly every time, no matter which vessel you use. As the reaction progresses, the microwave energy distribution adjusts automatically for changing chemical properties to optimally heat the reaction.

## 3 Compressed Air Reaction Quenching

Rapid cooling upon reaction completion allows safe handling in less than a minute. Superior performance to fan-based systems.

## 4 Electromagnetic Stirring

Fully adjustable in-situ stirring for even heat distribution that can be monitored on the 10" touchscreen interface with the integrated camera.

## 5 Camera

Fully integrated 5-megapixel camera.

### Auto Sampler Available

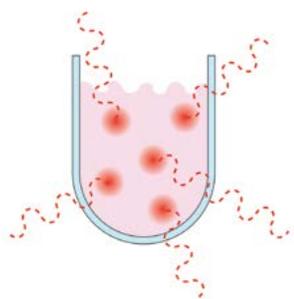
Our 12 or 48 place auto sampler can be used to increase throughput for the 35 mL and 10 mL vessels.

# Microwave Advantage

A refined form of energy, microwaves provide unique heating benefits to any reaction. Reactions are heated **volumetrically**, **directly**, and **instantaneously**, faster and more efficiently than any other form of heating. These microwave characteristics give organic chemists better product yield and more control over reaction conditions for precise results in materials and inorganic chemistry. Microwave energy is the industry standard for medicinal chemistry, nanomaterials synthesis, and academic teaching labs, owing to these clear advantages.

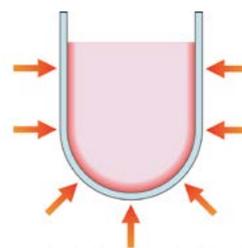
## Microwave Heating

The vessel wall is transparent to microwaves, allowing energy to be directly absorbed by the reactants. This direct molecular activation limits side reactions and provides a fast and efficient form of heating. Reactions that previously took hours, or even days, to complete can be performed in minutes.

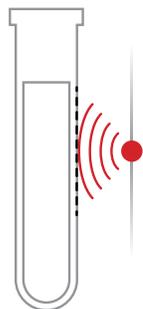


## Conductive Heating

With hot plates, oil baths, and heating mantles, energy is transferred indirectly to the reactants by applying heat to the outside surface of the vessel and solvent. This form of heating is slower and inefficient, achieving reduced synthetic results.



# Reliable iWave Technology



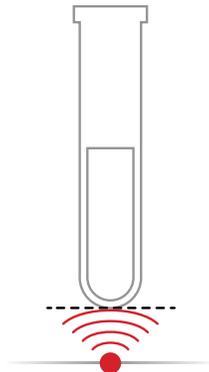
OK

IR sensor  
from side

(Non-iWave)

Accuracy  
●●○○○

Convenience  
●●●○○



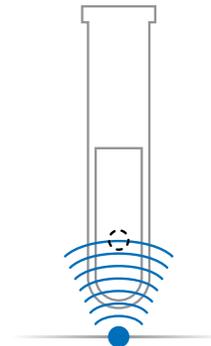
Good

IR sensor  
from below

(Non-iWave)

Accuracy  
●●●○○

Convenience  
●●●○○



Best

iWave

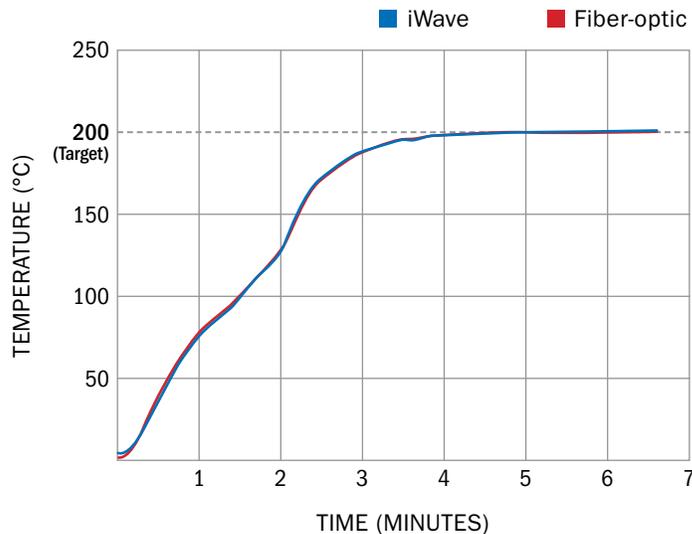
(Measuring Sample Not Vessel)

Accuracy  
●●●●●

Convenience  
●●●●●

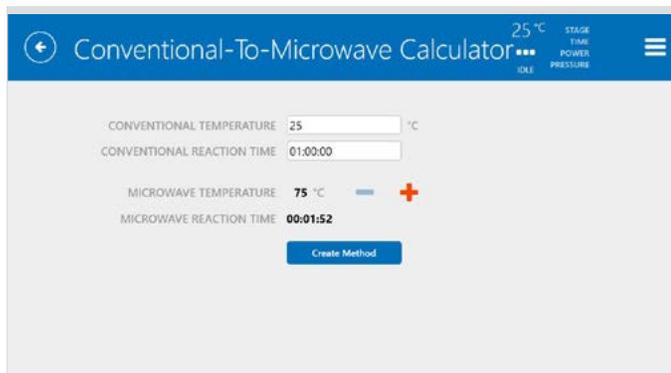
## Our iWave Sensor Sees Through Glass and Teflon

For the first time, a single-mode microwave reactor utilizing iWave, an intelligent IR temperature sensor that can see through glass and Teflon and measures your sample **not the vessel**. Based on new technology this powerful update eliminates the need for costly and fragile internal fiber-optic probes while providing the most accurate and responsive temperature measurement available.



# Intuitive Software for Any Chemist

- Fully customizable methods and cycles for any reaction
- User level access with full password protection and complete audit trail traceability
- Method import reduces programming errors and allows easy access to niche chemistries

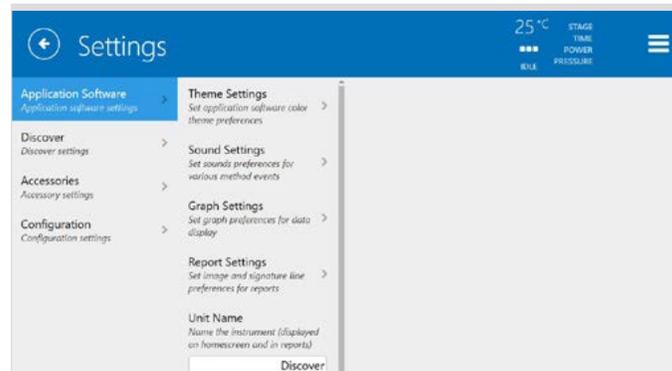
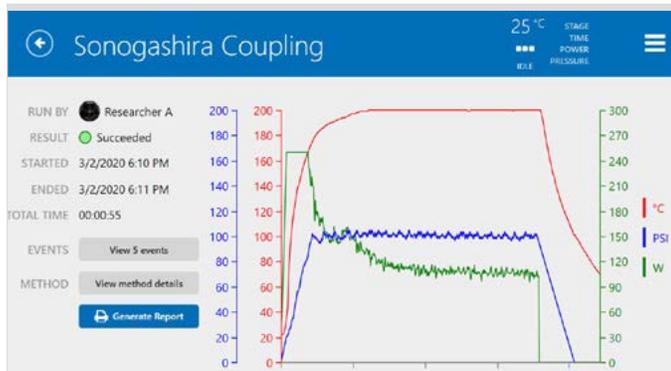


## Create Microwave Methods Directly from Literature

Method programming takes only seconds with the integrated conventional-to-microwave converter. Any standard literature preparation can be automatically changed to a microwave reaction in only a few clicks.

## Complete Control of Your Reaction

The Discover 2.0 features more flexibility in control type than any other microwave synthesizer. Heat to a target temperature quickly and consistently with standard control modes or explore the nature of microwave heating and control reaction pressure with advanced programming.



## Review Data Whenever, Wherever

Generate reports, review data, and export to a local network drive all from the Discover 2.0. No need for a USB to move information to and from the instrument.

## Your Chemistry on Your Instrument

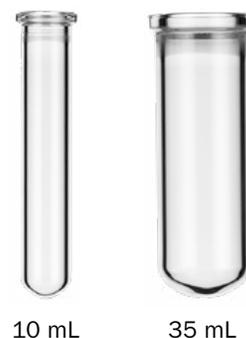
Fully customize all aspects of the Discover 2.0. Power control, method parameters, data management, user logins, color themes, sounds, unit name and many more parameters are all at your fingertips.

# Additional Tools Available

## Vessel Options

### **A wide range of high-temperature sealed reaction vessels.**

Perform hydrolysis reactions in both 10 mL and 35 mL glass vessels. In addition, a disposable 35mL Teflon liner can be utilized for base hydrolysis. Disposable liners can easily be used as iWave can see through glass and Teflon for accurate temperature measurements.



## Discover Gas Addition

### **Use gaseous reagents with safety and ease.**

The Gas Addition accessory is the only system specially designed to create an inert environment with nitrogen. This accessory allows you to pull a vacuum, purge the reaction vessel, and back-fill it with a gas. During the reaction, the gas source is completely shut off from the microwave, thereby ensuring your safety at all times.

The addition of nitrogen allows you to hydrolyze peptides and proteins without the risk of oxidizing your sample. This addition is compatible with 10mL vessels only.



## Auto Samplers

### **Offers fully automated reaction handling.**

Optimize your reactions and expand the capabilities of your laboratory without expanding your lab space. Auto samplers for the Discover 2.0 are available in 12 and 48 position modules, providing fully automated reaction handling capabilities ideal for shared synthesizers and high-throughput labs. Run either 10 or 35 mL vessels, or a combination of both easily. Intelligent rack design allows the auto sampler to recognize the vessel type without user input, and the integrated robotics ensure that switching between 10 mL and 35 mL reaction vessels occurs seamlessly, freeing your time for other things.





We Simplify Science

cem.com



Over 100,000  
systems sold  
worldwide



CEM Corporation  
ISO 9001:2015  
certified since 1994



All systems serviced &  
supported by experts  
with an average of 15  
years of experience



CEM invests 12% of  
annual revenue into  
R&D, the result...  
11 R&D 100 awards



IQ/OQ/PQ  
Validation by  
certified CEM  
Technicians

---

**United States  
(Headquarters)**

800-726-3331  
704-821-7015  
info@cem.com

**France**

33 (01) 69 35 57 80  
info.fr@cem.com

**Germany, Austria,  
Switzerland**

(49) 2842-9644-0  
info@cem.de

**Ireland**

+353 (0) 1 885 1752  
info.ireland@cem.com

**Italy**

(+39)035896224  
info.srl@cem.com

**Japan**

+81-3-5793-8542  
info@cemjapan.co.jp

**United Kingdom**

(44) 1280-822873  
info.uk@cem.com

For distributors in other regions, visit [cem.com/contact](https://cem.com/contact)