

HST REDS

Rapid **E**nzyme
Digestion **S**ystem



Hudson
Surface
Technology

ASTA & HST

REDS

Rapid Enzyme Digestion System offers low cost solutions for easy, fast and safe enzyme reactions. The system increases the temperature of the reaction samples as well as the water in the jar evenly and instantly. High-frequency microwave generated from electricity is transferred continually to the solvent and solute molecules, which increases the effective collisions and the rate of reaction, reduces the overall reaction time drastically. It is very efficient for sample prep in electrophoresis and for many enzymatic reactions like proteolysis in proteomics, or PNGase F reaction for glycan separation from glycoproteins. It covers not only a single sample but 96 samples in the 96-well plate at one time operation for large scale protein digestion or biomarker research.

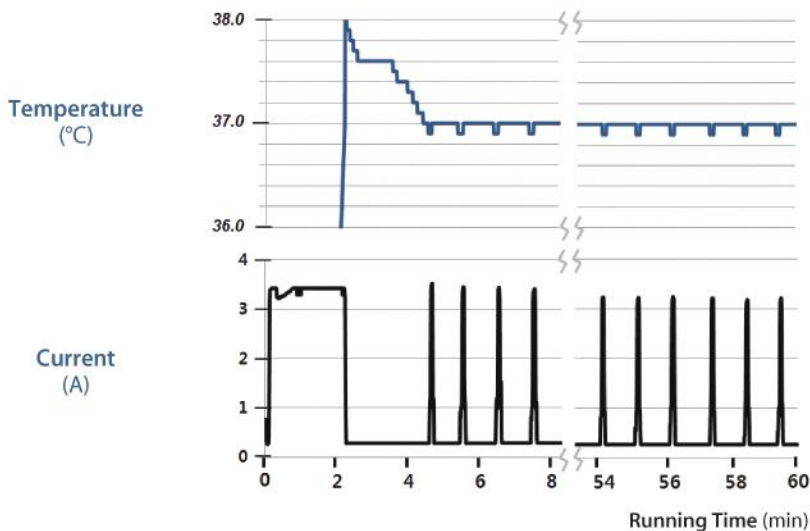


REDS

- Fast Automated Digestion : 5 ~ 10 minutes
- High Throughput : Simultaneous digestion up to 96 sample loads
- Precise Control of Temperature : Temperature deviation = ± 0.5 °C
- Easy to Use : Top-loading, Simple design
- High Safety : Closed vessel microwave system
- Flexibility : Power = 50 ~ 950 W,
Vessel = tubes, 96-well plate, 1 liter bottle
- Homogeneous & Reproducible for Any Sample Position

	HST REDS	Other Commercial Product
Microwave Power Range	50 ~ 950 W	1 ~ 300 W
Temperature Control Module	Yes	Yes
Versatilities of The Vessels	One Batch can run 35 ea of 1.5 mL Tubes and 48 ea of 0.5 mL Tubes	One Batch can run 14 ea of 1.5 mL Tubes or 20 ea of 0.5 mL Tubes
	96-well plate Available	96-well plate Unavailable
	1L bottle Available	1L bottle Unavailable
Temperature Control	Very accurate ($\pm 0.5^\circ\text{C}$)	Not accurate ($\pm 2\sim 5^\circ\text{C}$)
Cooling System	Yes	Yes (Optional)
Cooling Unit	Included	Purchased separately

- It takes 3 to 5 minutes to reach the set temperature for general enzymatic digestions.
- The reaction temperature of the system is controlled within $\pm 0.5^\circ\text{C}$, once REDS reaches the set temperature.



The change of the water temperature in the jar (Initial water temperature was 22.3°C) and the change of electrical current as the running time elapses right after the initiation of REDS (Power set was 600 W).



Specification

1. High-Capacity

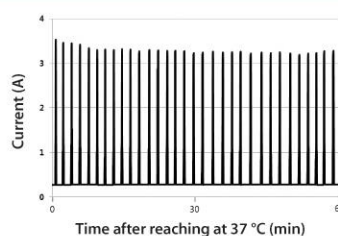
- Wide chamber space is available
- High capacity and enabling a variety of experiments



96-well plate Available
One Batch can run
35 ea of 1.5mL Tubes
and
48 ea of 0.5mL Tubes

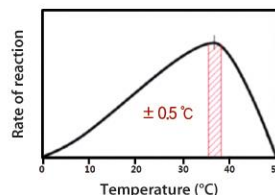
2. Effective Microwave Output

- Uniform and constant output



3. Precise Temperature Control

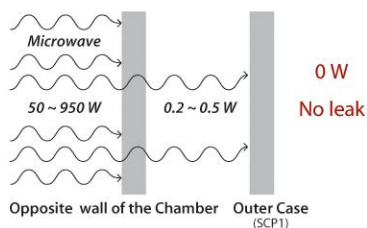
- Reaction is completed quickly since the highest reaction rates are obtained by controlled reaction temperatures as 37 ± 0.5 °C



4. Safety

- Material of REDS chamber steel case is made of SCP1, which enhances the safety by complete blocking the leak of microwave.

(EMI/EMS Standard)



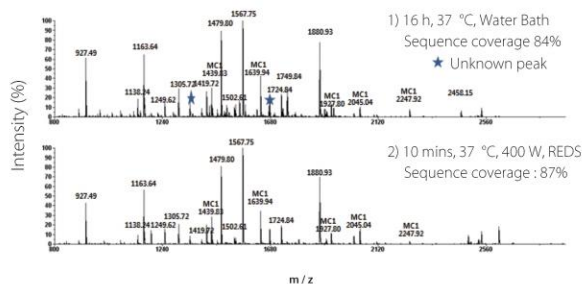
Air Bubbling Effect

- Circulating the water in the jar.
- Maintain the constant temperature.
- Cooling down effect around 0.5 °C by air bubbling and circulation, keep microwave pulse continually to make up the lost temperature.

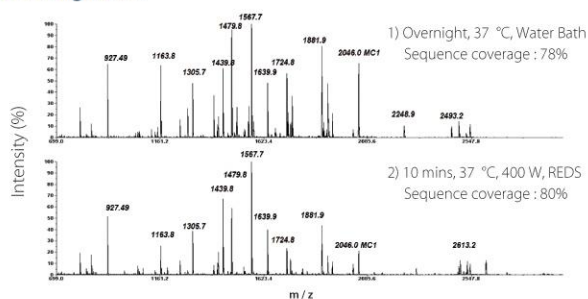


1. Trypsin Digestion of BSA

In Solution Digestion



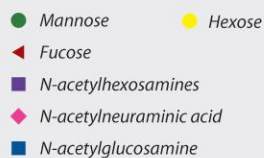
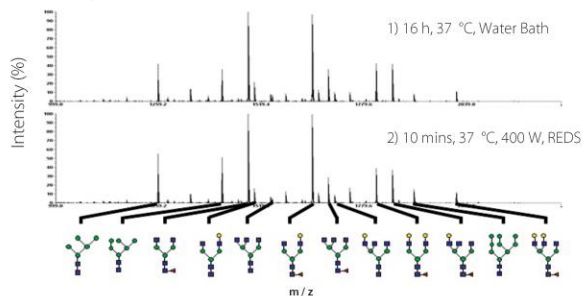
In Gel Digestion



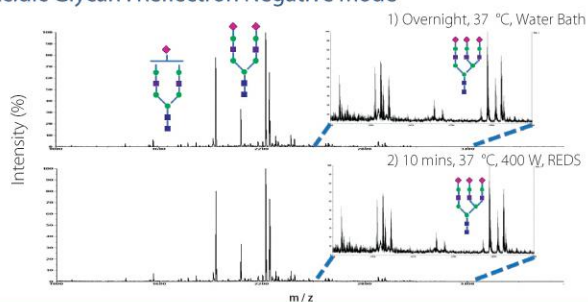
Trypsin digestions were performed both in solution and in gel state. Reaction in REDS for 10 mins at 37 °C showed more effective sequence cleavage than the reaction in regular water bath for 16 hrs. The proportion of the missed cleavage during the reactions were confirmed to be almost the same in both cases.

2. Deglycosylations of Human Serum with PNGase F

Neutral Glycan : Reflectron Positive Mode



Acidic Glycan : Reflectron Negative Mode

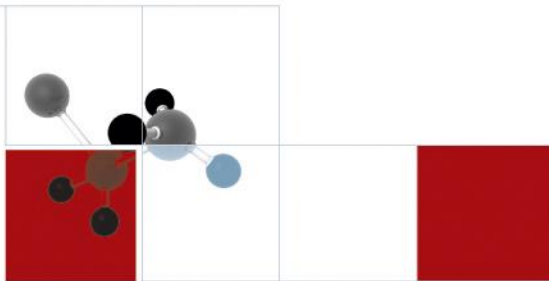


The digestion of human serum glycoprotein with PNGase F were performed in water bath and in REDS, respectively. Then, the glycans were obtained by solid phase extraction with carbon graphite column. MALDI-TOF mass spectrometry of the glycans from both cases showed the same results.



Rapid Enzyme Digestion System Hudson Surface Technology Inc.

Visit www.maldiplate.com
for more information



ISO 14001



ISO 9001



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