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# In-situ Tensile Heating & Cryo Stage

**2024 V1**
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# In-situ Tensile Heating & Cryo Stage

The In-situ Tensile Heating & Cryo Stage is an advanced experimental device designed for stress-strain testing of materials under various temperature conditions.

This Series, integrated with an in-situ tensile module, can perform stretching, compression, or reciprocating motion in constant force or constant speed modes to explore the mechanical properties of materials. Equipped with liquid nitrogen cooling and resistance heating technology, it can achieve a temperature range from -190°C to 1500°C, meeting a wide range of experimental needs. As technology advances and the market expands, the application scope and market demand for this equipment will further increase.

\* The product must be used in conjunction with a temperature controller, a cooling controller (optional), and an in-situ tensile controller. The accompanying PC software facilitates the setting of temperature and mechanical parameters and data collection.

In-situ Tensile Heating & Cryo Stage
CRYO600-190-5000N

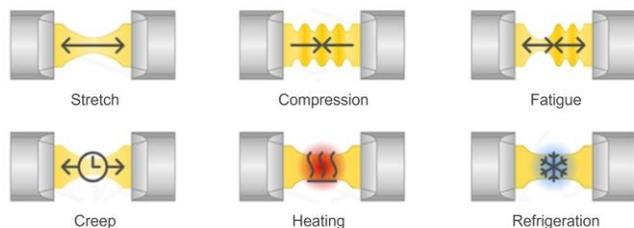SEM In-situ Tensile Heating & Cryo Stage
RTH1000-5000N-SEM

## Features

- **Flexible temperature control**  The combination of liquid nitrogen cooling and resistance heating ensures precise temperature adjustment.
- **High precision measurement**  Provides high-precision mechanical and displacement measurements, ensuring the accuracy of experimental results.
- **Multifunctional application**  Supports various mechanical modes such as stretching, compression, bending, and shearing.
- **Easy to operate**  The accompanying PC software simplifies the setting of temperature and mechanical parameters and data collection.

## Applications

The in-situ tensile heating and cooling stage is widely used in materials science, biomedical engineering, chemical engineering, and other fields. It is particularly suitable for studying the mechanical properties of materials under different temperature conditions, such as stress-strain analysis of metals, plastics, ceramics, and composite materials.

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## Functions & Customization



Stretch    Compression    Fatigue

Creep    Heating    Refrigeration

In-situ tensile heating & cryo stage realizes function
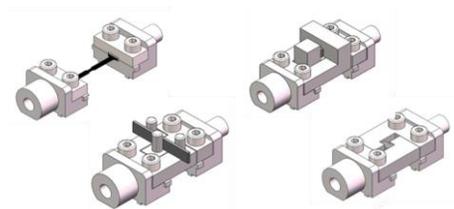
Various type of Fixtures

## Specifications

| In-situ Tensile Heating & Cryo Stage | CRYO600-190-5000N | RTH1000-5000N |
|---|---|---|
| **Temperature Control Module** | | |
| Cooling & Heating | Liquid nitrogen refrigeration, resistance heating | Resistance heating |
| Temperature Control Range | -190～600℃ * | RT~1000℃ * |
| Temperature Stability | ±0.1℃ (<600℃), ±1℃ (>600℃)* | |
| Temperature Resolution | 0.1℃ | |
| Temperature Control Speed | 0~30℃/min (fixed point/segment temperature control possible) | |
| Temperature control method | PID | |
| Temperature Sensor | PT100 | Thermocouple |
| **Mechanics Module** | | |
| Pulling Range | 0-5000N *(500N, 1000N, 2000N, 5000N, etc. optional) | |
| Pulling Force Accuracy | 0.5%FS * | |
| Displacement Distance | 40mm (two-way, optional) * | |
| Stretch Speed | 0.1~60mm/min * | |
| Displacement Accuracy | ±1μm | |
| Mechanical Mode | Tensile (hot and cold), compression, bending, shearing | |
| **Optical Properties** | | |
| Light Path | Reflected light path *Can be upgraded to transmitted light path | |
| Window Material | Quartz glass * | |
| Window Size | Φ45mm * | |
| Objective Working Distance | 20mm * | |
| Light Hole | No light-transmitting hole by default *Light-transmitting hole can be upgraded | |
| **Structural Properties** | | |
| Sample Table Size | 12x36mm * | 12x12mm * |
| Sample Carrier Material | Silver* | |
| Dimensions | 360×150×40mm * | |
| Sample Chamber Height | 17mm * | |
| Chamber | Airtight, can be filled with protective atmosphere* | |
| Basic Configuration | In-situ stretching hot and cold table x1, in-situ stretching controller x1, temperature controller x1, refrigeration controller x1 (low temperature configuration), liquid nitrogen tank x1 (low temperature configuration), temperature control stretching integrated software x1, cycle Water system x1, several connecting pipes | |
| Optional | Computer host/installation bracket/customized control software/DIC-Micro microscopic strain measurement analysis system | |
| Remark | The above are all default parameters * are customizable items | |

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## Applications
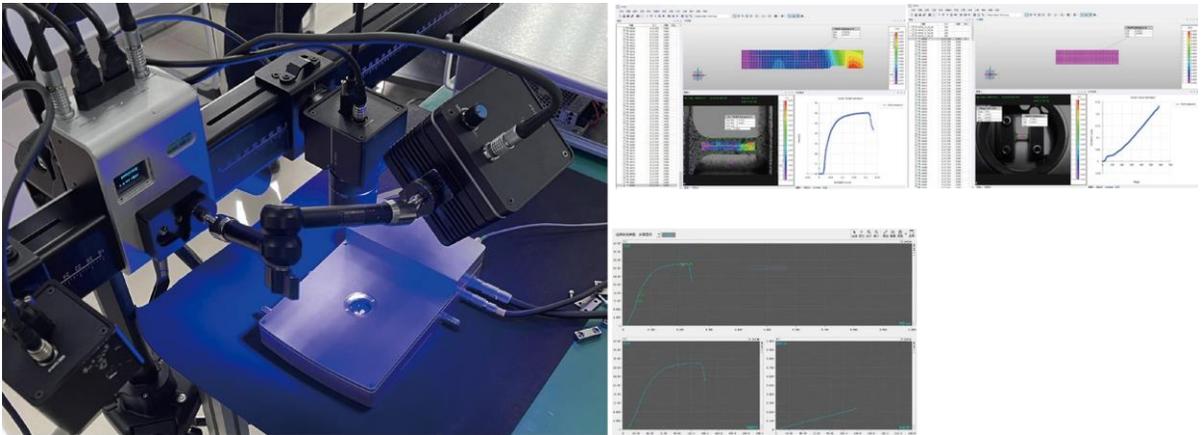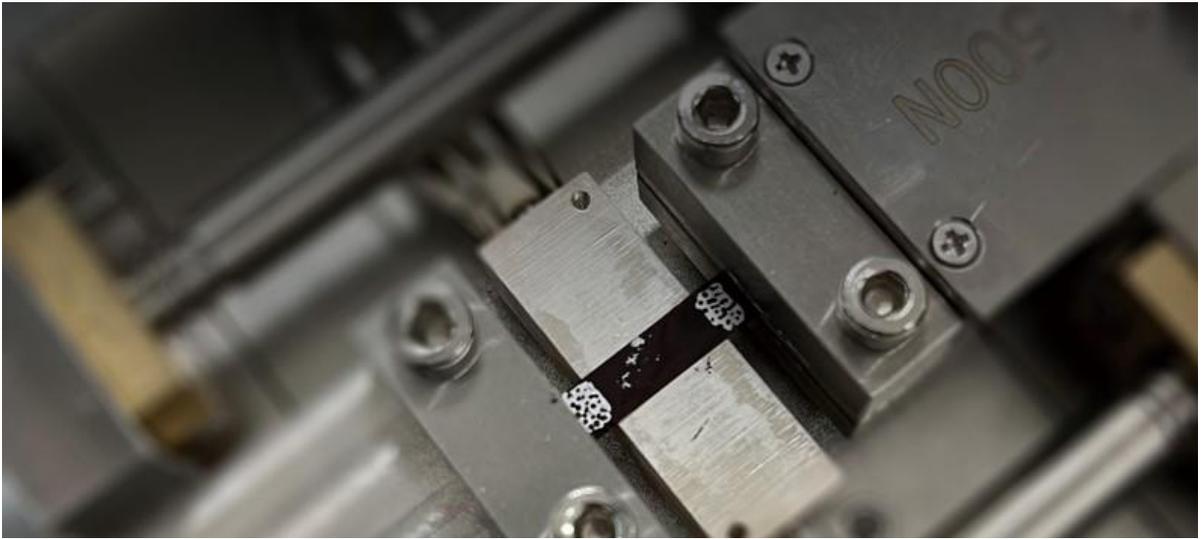




Variable temperature tensile micro-deformation testing system
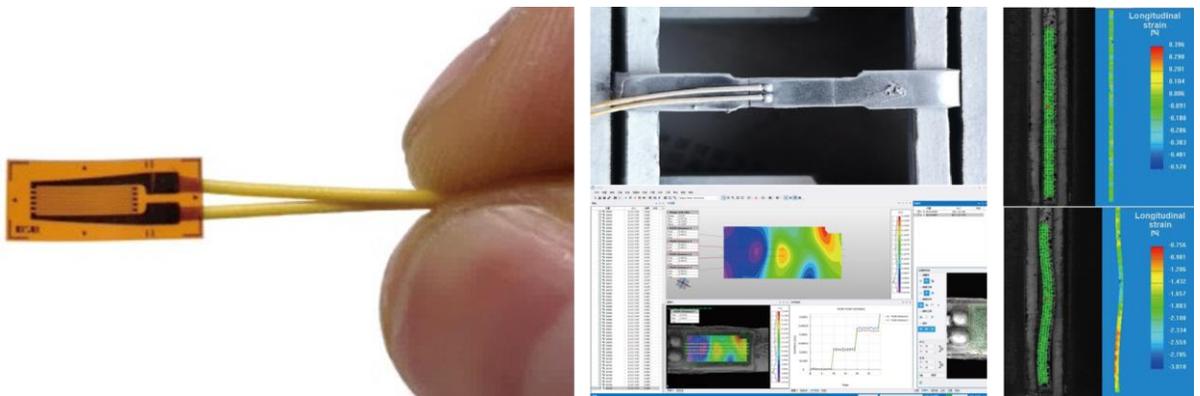


Welding strength test (with DIC system)

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