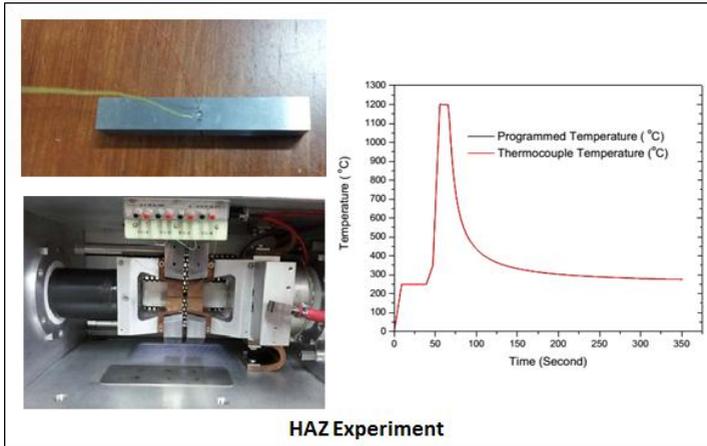
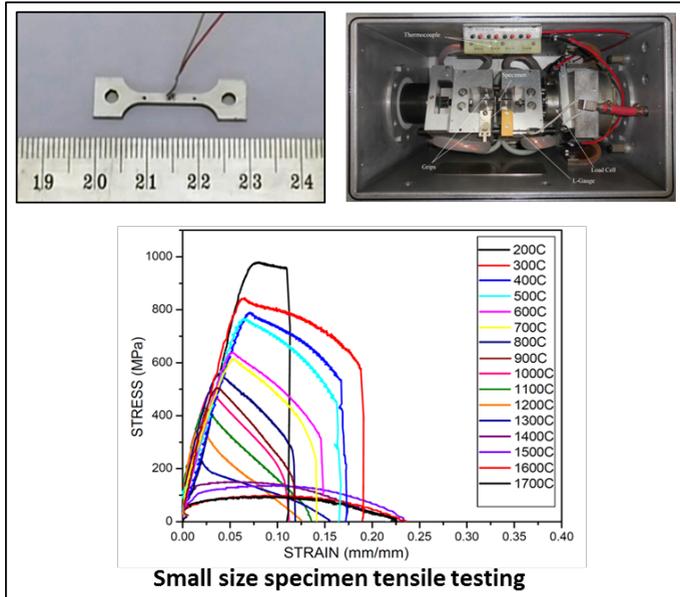


Experiments using Gleeble 3800 system

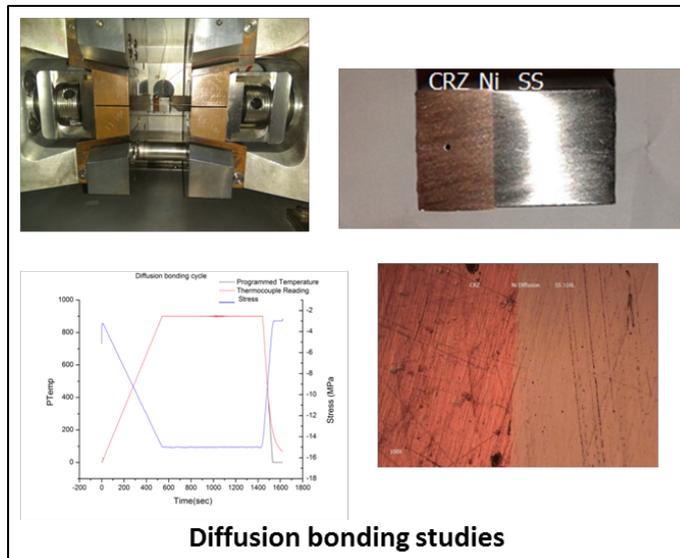


Experiments using Gleeble 3800 system



CONTACT

<http://www.ipr.res.in/httd/index.html>
 Ph-No: +91-79-2396 2073
 Fax.No: +91-79-2396 2277
 E-mail id: technology@ipr.res.in



Gleeble 3800
A Thermo-mechanical Simulator System

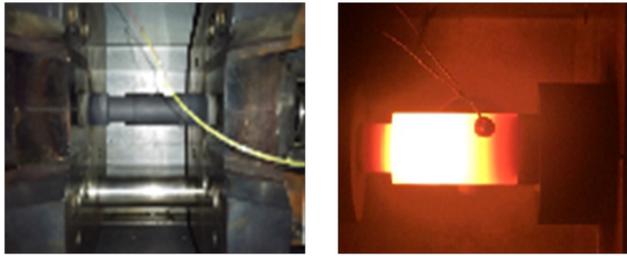


High Temperature Technologies Division

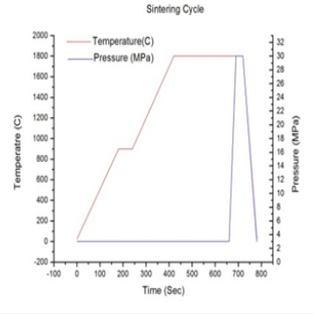


Institute for Plasma Research
 Bhat, Gandhinagar, Gujarat,
 India-382428
www.ipr.res.in

Experiments using Gleeble 3800 system



Two photographs showing the tungsten sintering process. The left image shows a specimen being heated in a furnace, and the right image shows a glowing specimen being held by a wire.



A line graph titled 'Sintering Cycle' showing Temperature (C) on the left y-axis (ranging from -200 to 2000) and Pressure (MPa) on the right y-axis (ranging from 0 to 32) against Time (Sec) on the x-axis (ranging from -100 to 800). The temperature curve (red) rises from 0 to 1800°C over 400 seconds, remains constant until 600 seconds, and then drops to 0. The pressure curve (blue) remains at 0 MPa until 600 seconds, then rises to 32 MPa and remains constant until 700 seconds.

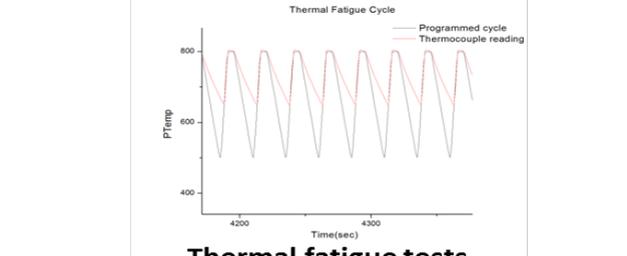


A photograph showing a grid of tungsten specimens at various stages of sintering, with a ruler for scale.

Tungsten Sintering Experiments



Two photographs showing thermal fatigue testing. The left image shows a specimen in a furnace, and the right image shows a glowing specimen being held by a wire.



A line graph titled 'Thermal Fatigue Cycle' showing Temperature (C) on the y-axis (ranging from 400 to 800) against Time (sec) on the x-axis (ranging from 4200 to 4300). The graph shows a programmed cycle (blue line) and a thermocouple reading (red line) that oscillates between approximately 400°C and 800°C.

Thermal fatigue tests

Application of Gleeble 3800 system

Material Testing

- High temperature tensile tests
- High temperature compression tests
- Hot ductility testing
- Nil Strength Tests
- Thermal fatigue tests
- Thermal-mechanical fatigue
- Creep test

Process simulation

- Melting solidification studies
- Continuous casting simulations
- Hot rolling simulations
- Forging simulation
- Weld HAZ cycle simulation
- Diffusion bonding
- Brazing
- Powder metallurgy/sintering
- Phase transformation
- Heat treating
- Quenching

Technical Specifications

Thermal System	
Type of heating system	Direct resistance with closed-loop control
Temperature control	Digital closed-loop control using 16 bit analog-to-digital converter and 16/32 bit digital signal processor
Temperature range	Room temperature to 2300°C
Accuracy of temperature control	± 1°C (in steady state)
Number of thermal channels	4 thermocouple channels, or 3 thermocouple channels and one pyrometer channel
Maximum Heating Rate	10,000°C/sec (for 6 mm diameter tensile specimen with 10 mm free span.)
Mechanical System	
Test frame	Horizontal type with dual 99 mm diameter columns
Mechanical system	Closed-loop hydraulic servo control
Maximum force in compression	196kN
Maximum force in tension	98kN
Maximum stroke rate	2000mm/sec in tension or compression
Minimum stroke rate	0.001mm/sec in tension or compression
Maximum stroke distance	125mm
Specimen Sizes	
Minimum specimen size required	5mm in diameter for round specimen 5mm square
Maximum specimen size allowed	20mm in diameter for round specimen 20mm square for square specimen