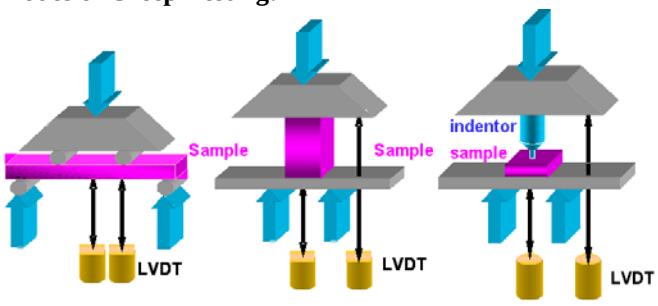
CREEP LABORATORY
at the Structural Ceramics Department

Creep laboratory is concentrated on the mechanical testing service of advanced ceramic materials at the temperature up to 1500°C. This laboratory contains 3 lever-arm creep frames. Each is equipped with a furnace for conducting tests at elevated temperature.

Tests methods:

- Creep in four-point bending mode, compression and indentation creep up to 1500°C
- High temperature bending strength measurements up to 1500°C
- Measurement of stable crack growth at elevated temperatures up to 1500°C
- Measurement of thermal shock resistance

Modes of Creep Testing:



Bending Creep Compressive Creep Indentation Creep

Equipments:

- **HTTF-1 (SSL) furnace** – four point bending test of ceramic materials subjected to loads typically in the range of 0.25 to 1.0 kN and temperatures up to 1500°C under a controlled air atmosphere.

- **HTTF-2 (SSL) furnace –** compression testing system for operation to 1500°C in air atmosphere with fully articulating fixtures for 4-point bend testing feature rigid support frames with integral high temperature furnace systems rated to a load capacity of 1 kN.
- **HTTF-2 furnace –** four point bending creep test mode with a load capacity of 1 kN and temperatures up to 1500°C under air atmosphere. The furnace is equipped with a continuous load system for the high temperature four-point bending strength measurements.

CERAMOGRAPHY LABORATORY
at the Structural Ceramics Department

Ceramography laboratory is equipped with the basic machine for the proper sample preparation which is the essential if true microstructure is to be observed, identified, documented and measured.

Laboratory contains low speed cutting machine, grinder and polisher Struers, and equipments for the preparation of thin foil for the TEM observation.

Preparation method:

Sectioning – Low speed cutting machine –– most commonly used are metal bonded diamond cutting wheel, however for very brittle and sensitive ceramics - resin bounded cutting wheel are recommended.

Grinding and polishing machine (Planopol Pedemax Struers) for manual or semiautomatic preparation of ceramic specimens. Different specimen holders can be used for clamping various kinds of shape of specimens. The machine allows preparation of materials with different hardness and toughness using various polishing clothes and diamond suspensions with grind size from 15 μm to 0.25 μm.

Thin foil preparation for observation of microstructure using Transmission Electron Microscopy (TEM). Following equipments are required for sample praparation:

- ultrasonic disc cutter – allows cutting of 2.3 and 3mm (in diameter) TEM disc
- disc grinder – reduce the thickness of TEM disc to around 100 μm
- dimple grinder – reduces the thickness of central region of TEM disc to approximately 20 μm

ultrasonic disc cutter disc grinder dimple grinder