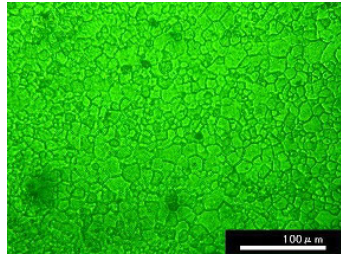


Deformation and Strength of Metallic Materials at High Temperatures

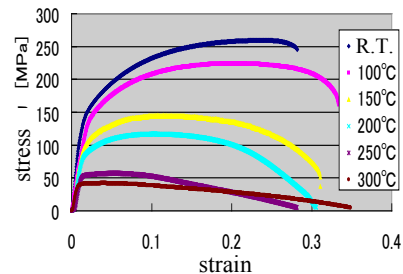
Associate Professor Norio Matsuda



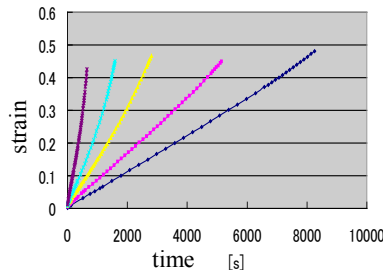
Observation of microstructures



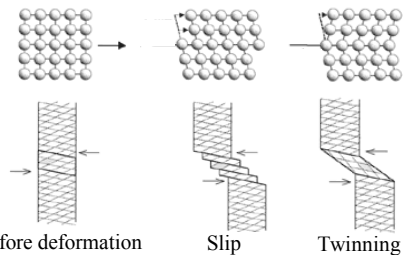
Creep tests and tension tests



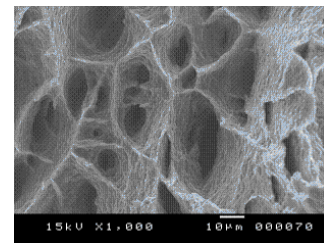
Evaluation of tensile properties



Evaluation of creep properties



Examination of deformation mechanism



Analysis of fracture mechanism

Content:

Deformation behavior of metals and alloys changes greatly with the rise of temperature. The materials are strained with the increase in applied stress and stop the deformation under constant stress at room temperature. The materials deform with time at elevated temperatures even under constant stress (i.e. creep deformation). It is very important to examine high-temperature properties of the materials employed for machine parts and tools for the application at elevated temperatures. Means of strengthening of the materials for high-temperature are different from that for ambient temperature. It is also important to know the properties for the working of the materials.

Main subjects of research are as follows:

- (1) Effects of temperature and atmosphere on the deformation and fracture properties of alloys and metal matrix composites.
- (2) Effects of microstructure on the strength and mechanical properties of structural materials.
- (3) Effects of microstructure and temperature on the deformation properties of Mg alloys.

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