



Session description

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Title of the session: Properties and characterization of high strength materials and components for engineering applications

Objectives: The scientific principles for the knowledge of the static and fatigue strength of high-strength materials, their treatment processes and their transferability to components are the main topics of the session.

Objectives

- Calculation methodologies together with their validation in corresponding tests.
- Characterisation of both the microstructure and microstructural defects, since the strength of high-strength materials is essentially determined by them.
- Estimating the crack initiation and crack propagation mechanisms by fracture mechanics and transferring them to real components using transferability functions.
- Influence of thermal and mechanical treatments to improve the material properties and fatigue life.
- Engineering, computational approaches on the basis of transfer functions, which consider the degree of purity and the microstructure properties.