

Masterthesis

Topic: *Mechanical properties of an LMD-processed ferritic α'/α'' superalloy*

Start: every time

Description: Ferritic FeAl-based alloys have been considered widely as a highly promising group of materials for high-temperature structural applications. However, due to a lack of its creep resistance and ductility, they have not been able to be commercially used until this moment.

In the near future this may change, as a consequence of the considerable increase in creep resistance obtained by producing a coherent hierarchical microstructure of α'/α'' intermetallic precipitates in an α matrix.

The main objective of this thesis is to study the creep behavior of a promising ferritic superalloy with a hierarchical microstructure and Co, Cu contents. In this sense, compression creep measurements will be conducted in the temperature range from 600 °C to 750 °C after homogenization solution treatment (HST), and aging (HST+A) to identify which of the microstructure approach optimizes its creep performance.

Methods: LMD, Tensile testing, Creep testing, SEM

Place: WTM Erlangen

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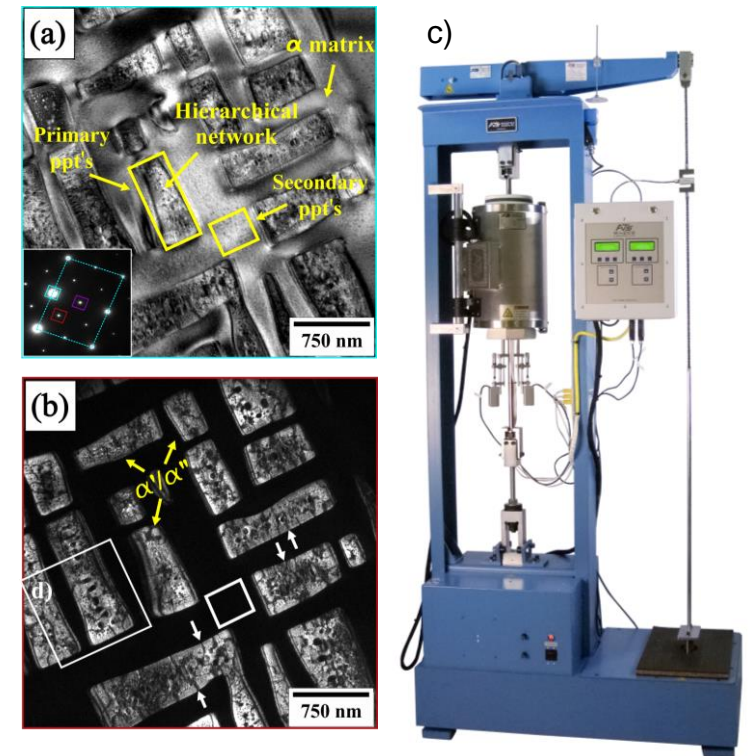


Fig.1 (a) Hierarchical microstructure (b) α'/α'' intermetallic precipitates (c) creep frame