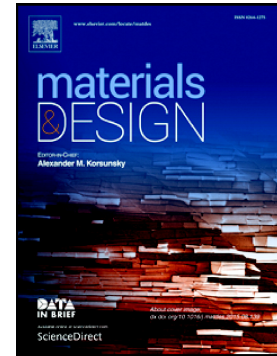


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Temperature dependence of tensile behavior and deformation microstructure of a Re-containing Ni-base single crystal superalloy

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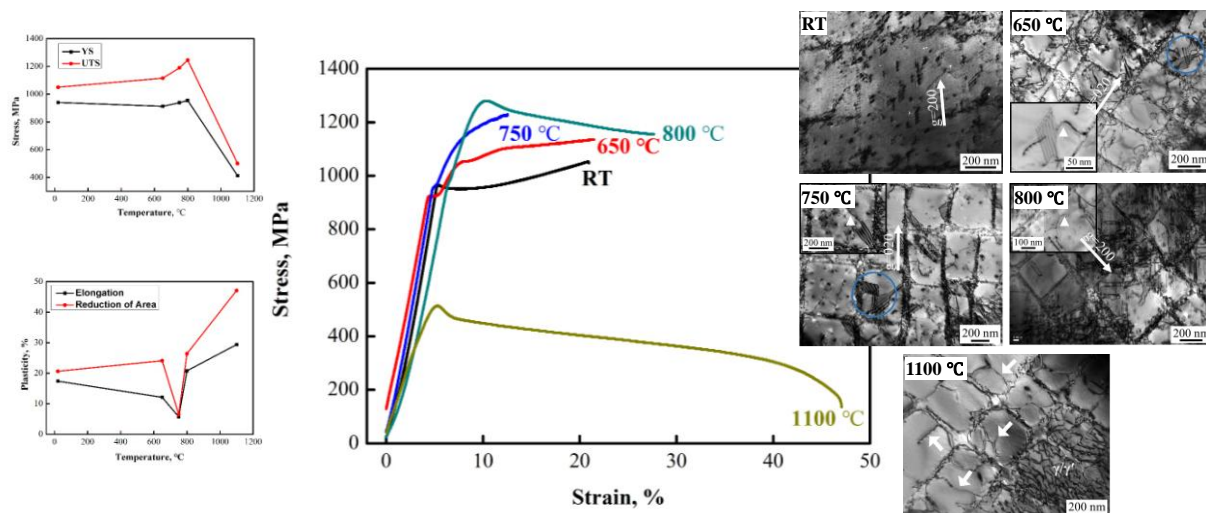
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Highlights:

- Plastic deformation is mainly controlled by γ channel width, γ/γ' lattice misfit and γ' intrinsic strength at every temperature.
- Isolated superlattice stacking fault formation below 800 °C is largely influenced by temperature dependent γ/γ' misfit and γ' intrinsic strength.
- Flow stresses at 800 °C and 1100 °C drop remarkably with numerous dislocations entering γ' precipitates after γ/γ' misfit relaxation.
- Thermally-activate and plasticity-induced γ - γ' microstructure modifications are considered to explain the deformation microstructure and tensile behavior.

Graphical abstract:



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