Microstructural Control of Heat Resistant Alloys

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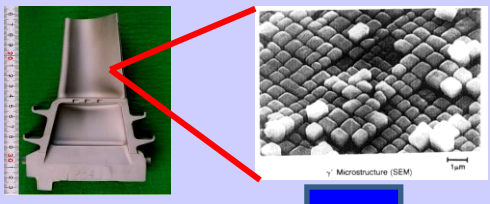
Innovation of Heat Resistant Metallic Materials based on their Microstructural Design

Heat resistant alloys saving the global environment



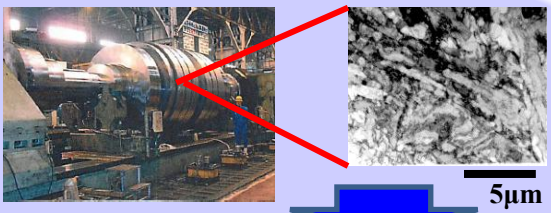
Stress Direction

[001]
[100]
[010]

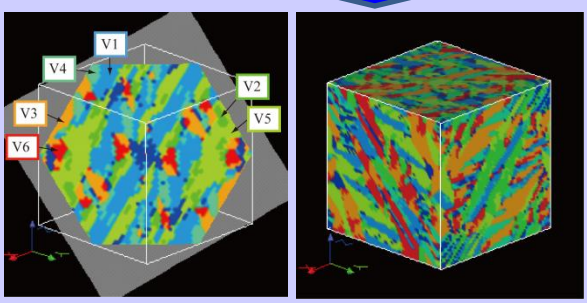
200nm

Microstructural evolution of the gamma-prime phase (white phase) in Ni-based superalloys during creep is simulated systematically for the first time.

Microstructural Analysis based on Total Free Energy in Metallic Materials



5μm



The mechanism for the formation of sub-block structures (V1~V6) in lath martensite phase, which is formed in advanced heat resistant steels, is elucidated for the first time by the phase field simulation using two-types slip deformation model developed originally.