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Effect of hafnium micro-addition on precipitate microstructure and creep properties of a Fe-Ni-Al-Cr-Ti ferritic superalloy

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Graphical Abstract

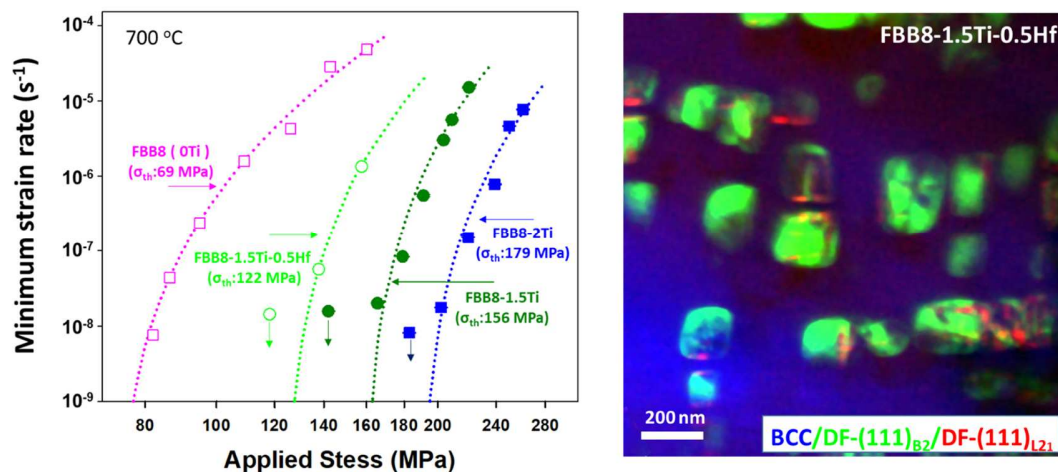


Figure descriptions

(Left) Plot of steady-state strain rate vs. applied stress for compression creep tests at $700\text{ }^{\circ}\text{C}$ showing that adding 1.5 or 2 wt.%Ti to a Fe-Ni-Al-Cr ferritic steel drastically increases creep resistance. When further adding 0.5 wt.% Hf, the creep resistance drops. (Right) Dark-field TEM micrograph of Ti- and Hf-modified steel aged at $700\text{ }^{\circ}\text{C}$ showing B2 precipitates (green) containing $L2_1$ sub-precipitates (red).

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