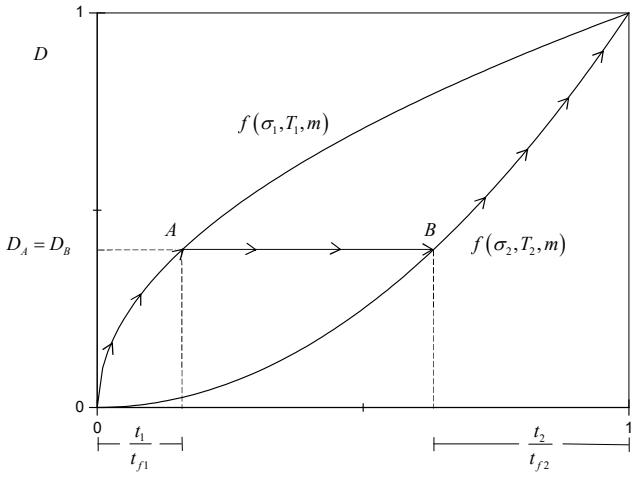


FIGURE 1 Creep damage curves

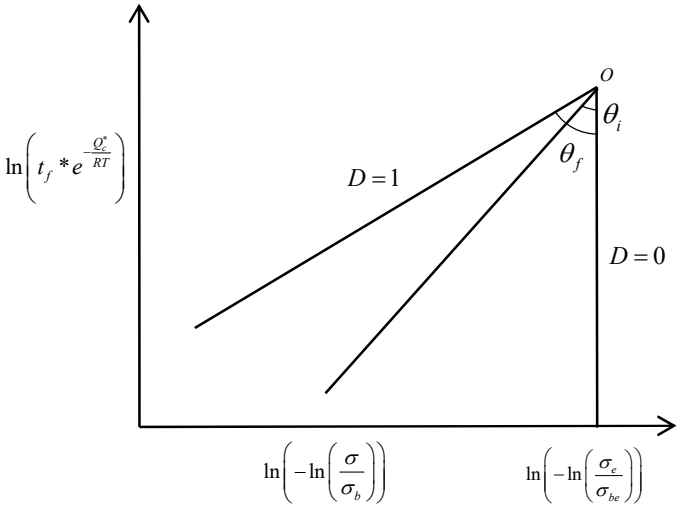


FIGURE 2 Definition of isodamage lines

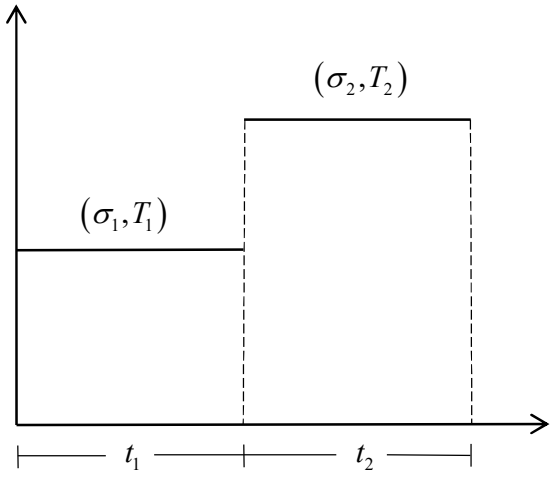


FIGURE 3 Two-step loading condition

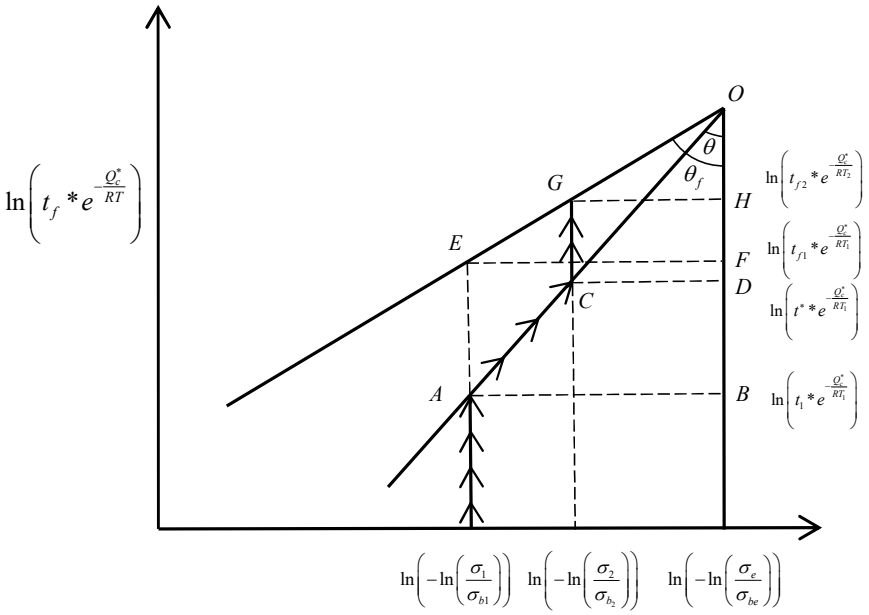
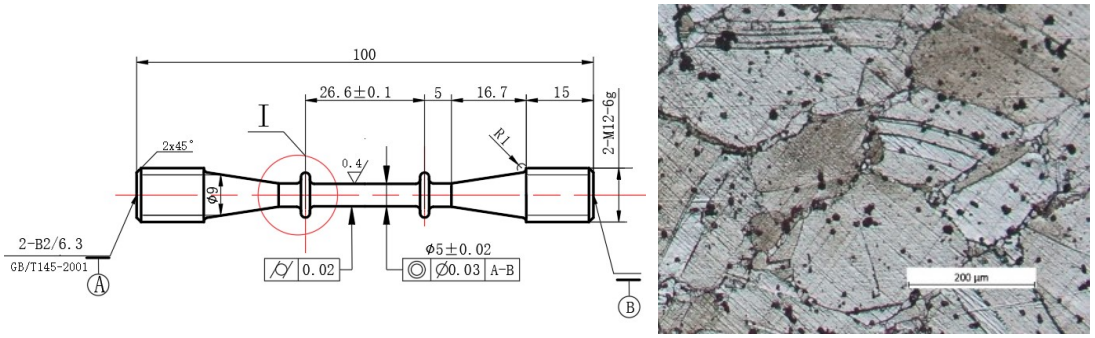
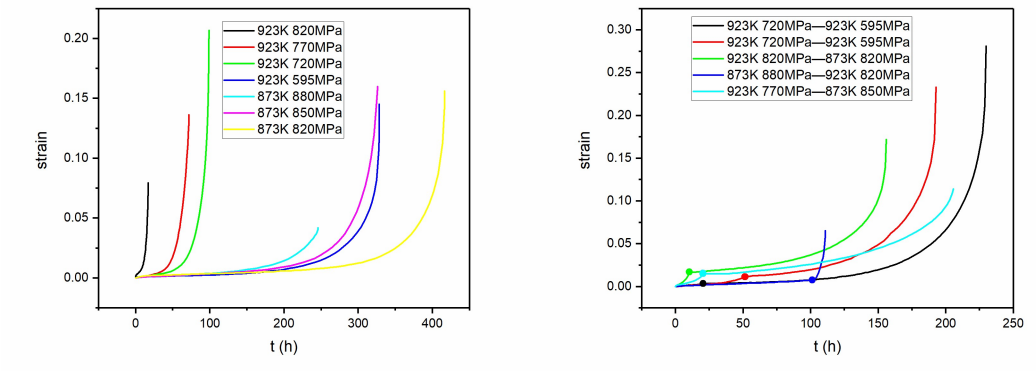


FIGURE 4 The accumulation of creep damage



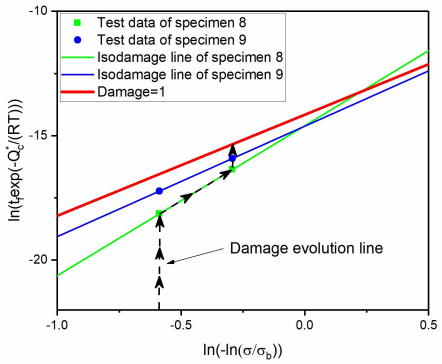
(A)The creep specimen (B) Microstructure of the superalloy GH4169

FIGURE 5 The specimens used for creep test and microstructure of the alloy

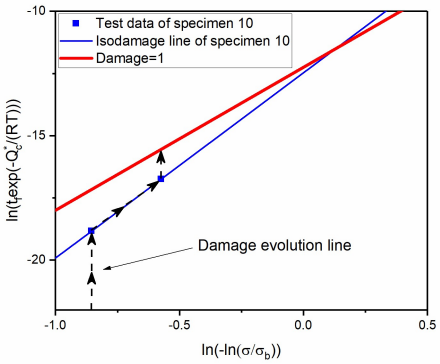


(A)The creep curves of specimens 1-7 (B) The creep curves of specimens 8-12

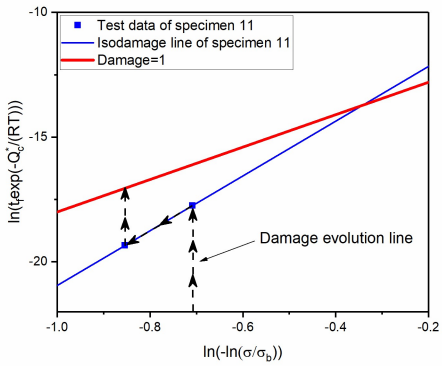
FIGURE 6 The creep curves of specimens 1-12



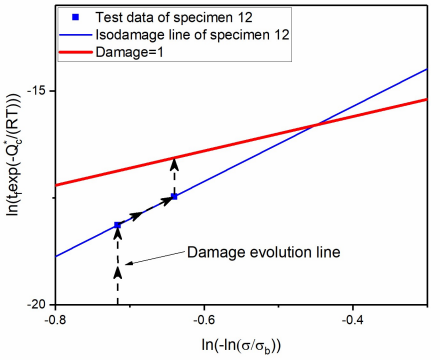
(A) Isodamage line and damage evolution line of specimens 8 and 9



(B) Isodamage line and damage evolution line of specimen 10

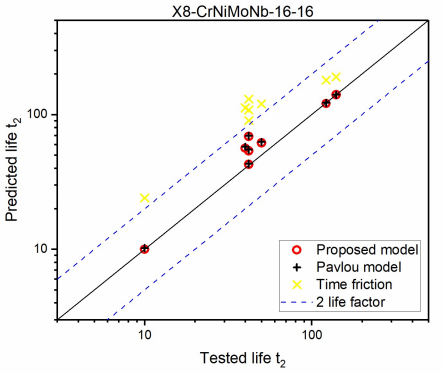


(C) Isodamage line and damage evolution line of specimen 11

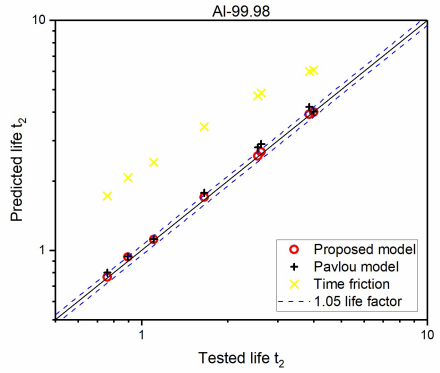


(D) Isodamage line and damage evolution line of specimen 12

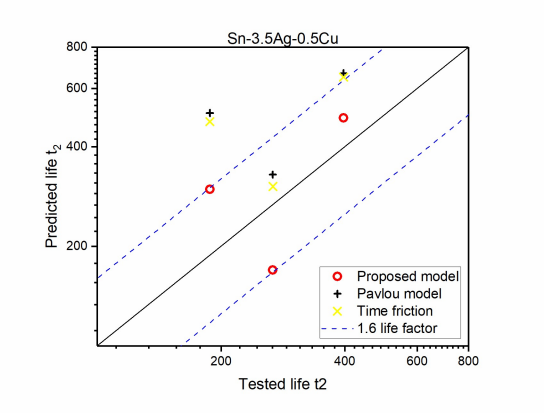
FIGURE 7 Isodamage line and damage evolution line of GH4169 material



(A) Comparison between the tested and model predicted life of X8CrNiMoNb-16-16

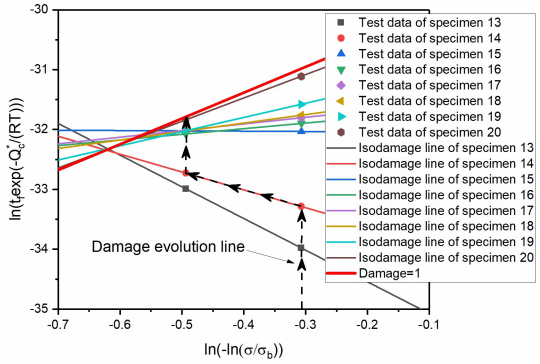


(B) Comparison between the tested and model predicted life of Al-99.98

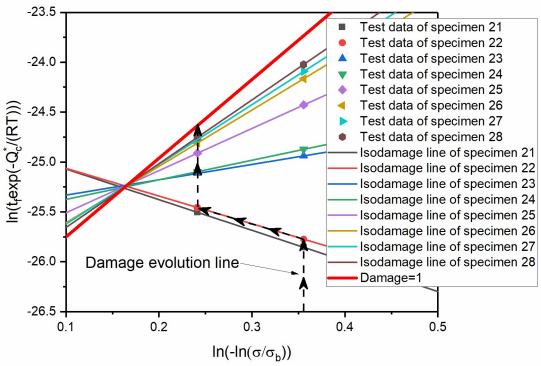


(C) Comparison between the tested and model predicted life of Sn-3.5Ag-0.5Cu

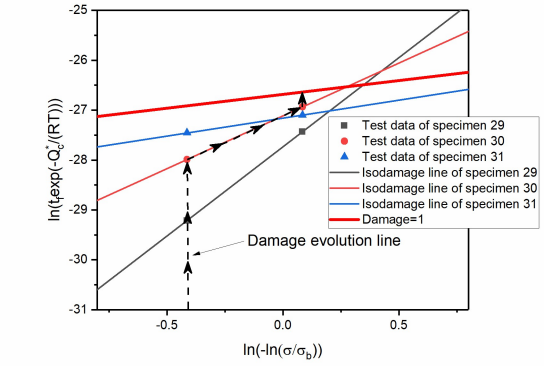
FIGURE 8 Comparison between the tested and model predicted life of three kind of materials.



(A) Isodamages lines and damage evolution line of X8CrNiMoNb-16-16



(B) Isodamage lines and damage evolution line of Al-99.98



(C) Isodamage lines and damage evolution line of Sn-3.5Ag-0.5Cu

FIGURE 9 Isodamage lines and damage evolution line of three kind of materials.

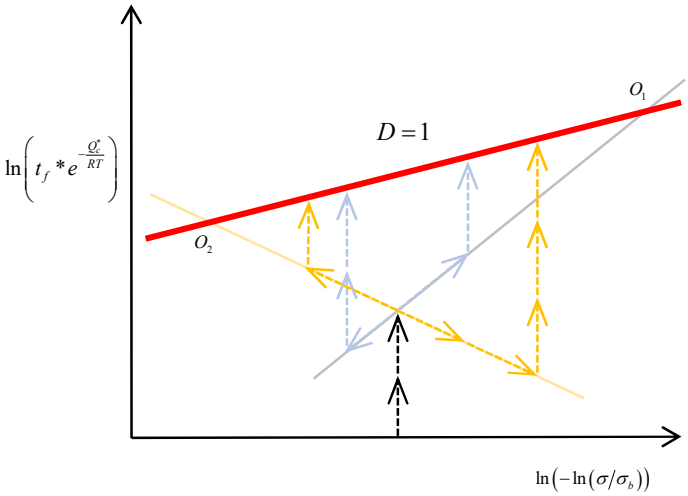


FIGURE 10 Four cases of damage evolution process