

Single Crystal Superalloys for Turbine Blade Applications

Practice Questions

Please try to answer these questions. We will cover the answers to these questions, and others, in the “live” lecture.

1. Why is the $\langle 001 \rangle$ direction chosen along the length of the turbine blade during directional solidification of dendritic structures in single-crystal Ni superalloys?
2.
 - i. Recall the main aims for polycrystalline material properties in Ni superalloys for turbine disks.
 - ii. Recall the main aims for single-crystal material properties in Ni superalloys for turbine blades.
 - iii. Explain the differences between the ideal processing aims of these two material types given the different demands of their applications.