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Abstract

A CoCrFeNi high entropy alloy has been solidified with a high undercooling up to 300K adopting glass fluxing method. Results show that the compressive yield strength of the alloy is enhanced about 3 times: from 137MPa for a traditional casting condition to 455MPa for the samples processed at large undercooling. The enhanced mechanical properties are attributed to both the refined grain size and complex phases obtained through the supercooling method, which appears to be an efficient way to modify the microstructure and improve the properties of high entropy alloys.

Keywords: High–entropy alloys; Supercooling; Mechanical properties; Microstructure

1. Introduction

The concept of high entropy alloys (HEAs) developed by Yeh et al. [1] has broken the traditional way of designing alloys. This new type of metal material brings researchers many challenges and opportunities in the field of material science and engineering. As a new field