

The surface textures of Ni-Cu alloys

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Surface textures of Ni and Cu foils are crucial in deciding the quality of thin films such as high-temperature superconductors or graphene, grown on them. The addition of Ni to Cu has been found to significantly change the deformation and recrystallization textures on the surface [1]. The current study discusses the effect of strain, strain path, and Cu content on the evolution of rolling and annealing textures. Contrary to the conventional observations, the [100] || ND orientations were stable even after large rolling reductions, and the fractions of typical rolling texture components are quite significant after annealing. The role of shear and friction at the surface could be the possible origins of deviation from distinct rolling textures. Interestingly, the predominant annealing textures did not evolve at the surface after high-temperature annealing at 1000 °C. Instead, a high fraction of twin boundaries formed with the increase in Cu content. The character and multiple variants of twin within a grain, assists in suppressing the typical annealing textures.

Keywords: Orientation stability, texture, twinning, EBSD

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References:

[1] G. Kaur, et. al. ACS App. Nano Mater. 3 (2020) 9804 – 9812.