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Texture of Hot-Compressed Metastable β-Titanium Alloy Ti5321 Studied by Neutron Diffraction

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The textures of the β - and α -phases of the metastable β -titanium alloy Ti5321 after hot deformation were investigated by neutron diffraction. A hot-rolled bar was solutionized in the β -phase field and then hot compressed above and below the β -transus temperature. The initial texture after full recrystallization and grain growth in the β -phase field exhibits a weak cube component {001}<100> and minor {112}<110> and {111}<110> components. After hot compression, a <100> fiber texture is observed, increasing in intensity with compression temperature. Below the β -transus temperature, dynamic recrystallization of the β -phase and dynamic spheroidization of the α -phase interact strongly. The texture of the α -phase is a <11–20> fiber texture, increasing in intensity with decreasing compression temperature. The mechanisms of texture formation during hot compression are discussed.

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