

MICROSTRUCTURAL BEHAVIOUR OF Ti6Al4V DURING ROOM TEMPERATURE DEFORMATION

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This study investigates the effect of room temperature deformation on the microstructural behavior of Ti6Al4V alloy. To study this, room temperature uniaxial compression test was carried out at low strain rate of 0.01 s^{-1} with increase in 5% stepwise degree of deformation up to fracture. At each stage of the deformation, stress strain curve was correlated with change in microstructure and grain orientation. Microstructural evolution and grain orientations are mapped at each stage of deformation with the help of electron back scattered diffraction (EBSD) and optical microscopy. Fracture of material occurs within 30% of deformation and exhibit grain refinement. Flow stress increases with increase in deformation and indexed in terms of increase in strain hardening exponent and hardness. EBSD mapping and microstructural analysis confirms Alpha phase fragmentation and grain size reduction. Deformed sample exhibit basal texture with increasing deformation.

Biography

Gajanan Kulkarni has qualified Masters' of Engineering from Defense institute of advance technology (DIAT), Pune with experience in the industry across, metallurgy, quality assurance, mechanical functions, production line, operations, safety and currently spearheading as Metallurgical Researcher with Bharat Forge Limited, Pune. He has his expertise in Material Science and Manufacturing Process. Currently spreads heading his knowledge in Research and development department in Bharat forge Ltd which is world's number one forging industry. He is well versed in conceptualizing and implementing new product design and development, analysis and materials projects. He is responsible for designing and developing the mechanical and thermal forging process to modify steel, titanium, aluminum and their alloy. Conduct chemical and physical analytical research on steel, titanium, aluminum and their alloy.

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