Project Title: Experimental characterization of the residual stress of 3D printed metal parts

Abstract

The accumulation of residual stresses during the manufacturing of the 3D printed metals induces defects such as the formation of micro cracks in the matrix. In the proposed study, the effect of the process parameters on the stress state will be investigated. To estimate the residual stresses in the laminate, the simulation of the sintering process will be accomplished using coupled thermal and structural analysis. The proposed approach will be implemented in ABAQUS software via a special user subroutine. Samples will be fabricated at Additive Manufacturing Technology Application and Research Center (EKTAM), Ankara. The fabricated samples will be investigated experimentally to determine the residual stress using the Drilling Hole Technique. The applicant is expected to be able to be at EKTAM during the fabrication period.

Required skills: Finite Element Analysis