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Modeling of equal channel forward extrusion force using response surface approach

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Abstract

Equal channel forward extrusion is a new severe plastic deformation method that has been developed in recent years. This study investigates the effect of significant parameters on the equal channel forward extrusion pressing force. First, the process was modeled by finite element method and has been validated using experimental results. Next, response surface method and analysis of variance were applied to investigate the influences of equal channel forward extrusion parameters such as friction coefficient magnitude, length-to-width ratio and main deformation zone height on the pressing force. Finally, a new formula is presented for prediction of equal channel forward extrusion pressing force using statistical modeling. © 2016, © IMechE 2016.

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