Society of Engineering Science 51st Annual Technical Meeting

1–3 October 2014

Purdue University, West Lafayette, Indiana, USA

Modeling fracture in nanotwinned matetrials

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ABSTRACT

The author reports on the results obtained so far through a combination of advanced experimental and statistical techniques as well as constitutive modeling based on a continuum dislocation dynamics and viscoplastic model. The implementation relies on a finite element code to perform simulations of DP980 steels which can be compared to experiments. Design guidelines will be in the form of a microstructure map that relates thermo-mechanical processing conditions to desired properties and cost constraints. The aim will be to guide manufacturers in selecting a series of processing steps to transform the original material to a final material with specific properties.