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PII: S0921-5093(18)30978-X
DOI: <https://doi.org/10.1016/j.msea.2018.07.052>
Reference: MSA36716

To appear in: *Materials Science & Engineering A*

Received date: 28 May 2018
Revised date: 14 July 2018
Accepted date: 14 July 2018

Cite this article as: Y. Zhang and H. Ding, Ultrafine also can be ductile: on the essence of Lüders band elongation in ultrafine-grained medium manganese steel, *Materials Science & Engineering A*, <https://doi.org/10.1016/j.msea.2018.07.052>

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ABSTRACT

We proposed a novel explanation to expatiate the essence of Lüders band governed yield point elongation in medium manganese steels. Lüders band propagation could be attributed to the inhomogeneous deformation caused by the offset between strain softening of ultrafine-grained (UFG) microstructure and strain hardening induced by transformation induced plasticity (TRIP) effect.

Keywords: Iron alloys; Plasticity; Phase transformation

1. Introduction

When grains are refined to an ultrafine-grained (UFG) or nano-grained (NG) level, materials usually exhibit superior strength [1,2], which leads to

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