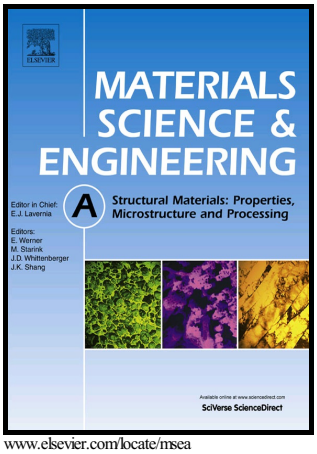
Author's Accepted Manuscript

Modeling of Surface Layer and Strain Gradient Hardening Effects on Micro-Bending of Non-oriented Silicon Steel Sheet

Zhe Wang, Shuhui Li, Xinke Wang, Ronggao Cui, Weigang Zhang



www.elsevier.com/locate/msea

PII: S0921-5093(17)31102-4
DOI: http://dx.doi.org/10.1016/j.msea.2017.08.085
Reference: MSA35433

To appear in: *Materials Science & Engineering A*

Received date: 28 June 2017
Revised date: 22 August 2017
Accepted date: 23 August 2017

Cite this article as: Zhe Wang, Shuhui Li, Xinke Wang, Ronggao Cui and Weigang Zhang, Modeling of Surface Layer and Strain Gradient Hardening Effects on Micro-Bending of Non-oriented Silicon Steel Sheet, *Materials Science & Engineering A,* http://dx.doi.org/10.1016/j.msea.2017.08.085

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Modeling of Surface Layer and Strain Gradient Hardening Effects on Micro-Bending of Non-oriented Silicon Steel Sheet

Zhe Wang[a,b], Shuhui Li[a,b,*], Xinke Wang[a,b], Ronggao Cui[a,b] , Weigang Zhang[c]

[a] State Key Laboratory of Mechanical System and Vibration, Shanghai Jiao Tong University, Shanghai 200240, PR China

[b] Shanghai Key Laboratory of Digital Manufacture for Thin-walled Structures, Shanghai Jiao Tong University, Shanghai 200240, PR China

[c] Innovation Center for Advanced Ship and Deep-Sea Exploration, Department of Engineering Mechanics, Shanghai Jiao Tong University, Shanghai 200240, PR China

Accepted manuscript

Abstract

Non-oriented silicon steel, as the key magnetic material of motors, has a general tendency toward thinner and coarser-grained. The characteristic of countable grain number in thickness leads to the so-called size effect. In the 4 point micro-bending experiments, it is observed that the deformation behaviors of non-oriented silicon steel sheet are size-dependent on both feature size (grain size, thickness) and strain gradient. The results show that the decrease of grain number in thickness direction would decrease the flow stress of overall material, but also expand the effect of strain gradient hardening. To address this issue, a hybrid model involving surface layer model with conventional strain gradient plasticity theory is proposed. The relationship between shear stress and dislocation density

* Corresponding author.

Tel.: +86-21-34206784; Fax: +86-21-34206784; E-mail address: lishuhui@sjtu.edu.cn.

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
✓ امکان دانلود نسخه ترجمه شده مقالات
✓ پذیرش سفارش ترجمه تخصصی
✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
✓ دانلود فوری مقاله پس از پرداخت آنلاین
✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات