<<塑性力学与冲击动力学进展>>

图书基本信息

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内容概要

《塑性力学与冲击动力学进展(ISPI2011国际会议论文集)(英文)》内容简介：This book contains 26 top—quality papers that were presented at the Third International Symposium on Plasticity and Impact （ISPI 2011）held in Hong Kong and Nansha, China on 8—12 December 2011. It reports on recent developments in the field of plasticity and impact engineering research from both the fundamental science and industrial application perspectives. The ISPI 2011 was dedicated to commemorate Professor Tongxi Yu ’ s 70th birthday and his recent retirement from the Hong Kong University of Science and Technology.It was specifically aimed at bringing together colleagues, friends and former graduate students of Professor Yu to discuss and exchange information on recent developments in plasticity and impact engineering, and to present their latest findings.

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书籍目录

章节摘录

版权页： 插图： In reality, a structure will evolve with strain under the influence of strain rate and temperature,and the evolution process is a balancing result of two competing processes—dislocation accumulation and dynamic recovery. The evolution which reflects the deformation history can be described by the strain hardening rate, $\theta = d\sigma / d\varepsilon = \theta (\varepsilon, \varepsilon, T; \sigma)$ .The structural parameter MTS can be determined if the evolution law of the strain hardening rate is known. （ⅰ） Model for FCC metal. Gao and Zhang proposed a quasi—power—type law, instead of the linear Voce law, in the relations of $\theta \sim \varepsilon$ and $\theta \sim \sigma$. By combining the two relations and using the equation describing the saturated value of MTS for fcc metals, they obtained the thermal component of MTS. On the other hand, the athermal stress of fcc metals includes an initial yield stress reflecting the influence of solute and initial defects, and a size—effect stress reflecting the influence of grain boundaries （GBs） in polycrystals （which is limited for conventional course—grained materials but quite obvious for nanocrystalline materials）. The grain size effect obeys the Hall—Petch （HP） relationship and can be regarded as constant if there are no physical changes to alter the average grain size during plastic deformation. After the MTS was determined together with the thermal activation function, the constitutive model for fcc metals was established. （ⅱ） Model for BCC metal. There exists an important difference between bcc and fcc metals in their thermally—activated dislocation mechanisms due to their different crystalline structures.The thermal activation area is closely related with strain for fcc metals but not for bcc metals.In other words, the strain hardening of bcc metals is not coupled in the thermal stress but belongs to the athermal stress. The athermal stress of bcc metals can be empirically determined by using power—law strain hardening. On the other hand, since the thermal stress of bcc metals is independent of straining, the saturated value of the thermal component of MTS should be the same as itself, i.e., $\sigma_{th} = \sigma_{th,s}$. As the saturation equation for fcc metals can be applied to bcc metals too, the thermal component of MTS for bcc metals can then be determined.

编辑推荐

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