

技术及应用

脉冲激光能量等效重离子LET研究

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摘要 基于重离子和脉冲激光与Si材料相互作用的机理分析, 提出了脉冲激光能量等效重离子LET的等效判据。该判据认为: 如果半导体材料每吸收1个光子就能产生1个载流子, 则脉冲激光和重离子诱发1个载流子所需的能量是等效的。利用该等效判据及Beer定律, 推导出线性吸收条件下脉冲激光能量与重离子LET之间等效换算公式。本工作计算的脉冲激光能量等效LET结果与国外文献结果一致。

关键词 [脉冲激光能量](#) [重离子LET](#) [等效计算](#)

分类号

Equivalent Heavy-Ion Linear Energy Transfer of Pulsed Laser Energy

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Abstract Based on the analysis of the interaction between heavy ion as well as pulsed laser and silicon materials, a criterion for a pulsed laser energy equivalent linear energy transfer (LET) was presented. The criterion assumes that if each absorbed photon can generate a carrier in semiconductor materials, the energy to generate a carrier induced by pulsed laser and heavy ion is equivalent. Using this criterion and Beer's law, an equivalent conversion formula between pulsed laser energy and heavy-ion LET under linear absorption was deduced. The calculation results of pulsed laser equivalent LET in this study are consistent with those in foreign documents.

Key words [pulsed laser energy](#) [heavy-ion LET](#) [equivalent calculation](#)

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