

综述评论

# 纤维增强复合材料强度理论的研究现状与发展趋势-----` `破坏分析奥运会"评估综述

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**摘要** 复合材料强度涉及许多力学问题,计算分析复杂. 由于分析问题的角度和解决问题的方法不同,迄今为止已经产生了许许多多不同的强度理论. 那么, 究竟这些理论的效果如何?为此, 在英国的工程与自然科学研究委员会和机械工程师协会支持下, 一个堪称为复合材料`破坏分析奥运会'的评估于1991年启动并在2004年完成. 本文根据参赛理论和评比结果, 对复合材料破坏与强度理论的研究现状进行了简要综述, 并指出了今后发展所需解决的一些问题.

**关键词** [复合材料](#), [强度理论](#), [本构关系](#), [应力计算](#), [破坏判据](#), [刚度衰减](#)

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## CURRENT STATUS AND FUTURE TREND OF RESEARCHES ON THE STRENGTH OF FIBER-REINFORCED COMPOSITES-----A SUMMARY OF THE RESULTS FROM A ``FAILURE OLYMPICS''

### Abstract

The strength and failure of a laminated composite involves many mechanisms and its analysis is very complicated in nature. Many theories about strength and failure have been proposed in the literature based on different physical, mechanical or logical considerations. Their applicability should be put into test with respect to practical problems. A ``Failure Olympics" on composite laminates, supported by the UK Engineering and Physical Sciences Research Council and the UK Institution of Mechanical Engineers, was launched in 1999, and completed in 2004. This paper briefly reviews and summarizes the current status of researches on the strength of fiber-reinforced composites based on the results from the ``Failure Olympics", with a discussion on some topics that need to be addressed in the future development.

**Key words** [composite](#) [strength theory](#) [constitutive relationship](#) [stress evaluation](#) [failure criterion](#) [stiffness discount](#)

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