

Overview

User experience with elastic-plastic test methods dates to 1981 when the first test standard in this field, ASTM E 813-81, J_{Ic} , A Measure of Fracture Toughness, became a part of the ASTM Standards. This original standard provided a starting point for standards development in elastic-plastic fracture mechanics throughout the world. In 1983 the first symposium on User's Experience with Elastic-Plastic Fracture Test Methods was sponsored by ASTM Committee E24 and held in Knoxville, Tennessee. Papers and discussion presented at this symposium was published in *ASTM STP 856* in 1985. The work presented included not only criticism of E 813 but also new and improved test techniques and many suggestions for improvement of elastic-plastic test technology.

This forum of new work and criticism had direct application to the development of a dramatically improved version of E 813 as well as the completion of a second test standard, ASTM E 1152, Determining *J-R* Curves, both of which were first included in the ASTM Book of Standards in 1987.

Much work has continued in the field of elastic-plastic fracture mechanics, and the new work is again having a direct impact on the ASTM test standards. The Second Symposium on User Experience with Elastic-Plastic Fracture Test Methods was held in Orlando, Florida, in November of 1989 to again bring together the experts with experience to share in testing of elastic-plastic and fully plastic materials. Papers presented cover experiences with the test standards, suggestions for improvements and modifications, possible redefinition of the limits of applicability, and applications to a range of materials including polymers. Generally the presentations and discussions at this symposium demonstrate a higher level of satisfaction with the E 813-87 standard than there was with the E 813-81 standard. Many suggestions for improvements were made and will become a basis for a continued evaluation of elastic-plastic test standards.

The editor would like to acknowledge the assistance of Dorothy Savini of ASTM, E. M. Hackett and J. P. Gudas of DTRC, Annapolis, Maryland, in planning and organizing the symposium. I thank the authors for making their presentations and submitting their formal papers which make up this publication, and I thank the attendees whose open discussions, questions, and comments resulted in a stimulating symposium. I especially thank the reviewers who read and critiqued the papers and who have helped me ensure a high degree of professionalism and technical quality in this publication.

I wish to thank Portia Wells and Inez Johnson of the U. S. Naval Academy Mechanical Engineering Department for their aid with document preparation and correspondence associated with both the symposium and this publication, and I wish to thank ASTM publications staff for their many contributions, including supplying deadlines, suggestions, and advice during the preparation of this special technical publication.

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