Fatigue 2014 Foreword

FATIGUE 2014 is the 11th meeting of the International Fatigue Congress. This issue of Advanced Materials Research contains selected full-text papers presented at FATIGUE 2014. All papers have been peer reviewed by at least two reviewers.

The first meeting of this Fatigue Congress series was held in 1981 in Stockholm (Sweden). Then followed meetings in Birmingham (U.K., 1984), Charlottesville (U.S.A., 1987), Honolulu (Hawaii, U.S.A., organized by Japan, 1990), Montreal (Canada, 1993), Berlin (Germany, 1996), Beijing (P.R. China, 1999), Stockholm (Sweden, 1992), Atlanta (U.S.A., 1996) and Prague (Czech Republic, 2010). During FATIGUE 2010 in Prague the International Steering Committee decided to hold the FATIGUE 2014 in Melbourne, Australia.

Fatigue of materials, structures and components continues to provide substantial limitations in a very wide field of engineering. It still provides challenges for the designers, manufacturers, and operators of equipment that is subjected to cyclic loads. While recent research has improved our understanding of the microstructural aspects of fatigue and validated fatigue crack growth models, we continue to rely on a large body of empirical data to manage structural systems and to minimise the risk of unanticipated catastrophic failure. Such failures still occur, and some of these failure events have prompted major research effort to bring about major improvements in fatigue management approaches. One of the major changes seen is that we no longer regard fatigue as a separate degradation process, but rather as one of several degradation mechanisms which can interact to reduce useful service life; an obvious example is the interaction between fatigue and corrosion, and it is gratifying to see that progress continues to be made in understanding their joint impact, at both a fundamental level, and in terms of life management.

The range of engineering applications where fatigue has a significant influence is quite remarkable; it continues to grow as new materials are employed, and increases as designers attempt to extract improved performance from components without reducing their service lives, or increasing risk of failure. While new, efficient design tools and sophisticated inspection and monitoring approaches are emerging, it seems likely that there are sufficient unknowns and uncertainties to ensure that research in fatigue will continue to provide new challenges into the future.

The Congress Chairs, Local Committee and Organisers of FATIGUE 2014 would like to thank the presenters, sponsors, exhibitors, and reviewers for their support.

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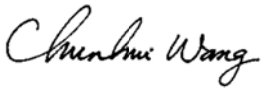

Prof Graham Clark
Congress Co-Chair

Prof Chun H. Wang
Congress Co-Chair

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