STRENGTH & LIFE OF COMPOSITES

Stephen W. Tsai, Editor

Professor Research Emeritus
Stanford University

Composites Design Group
Department of Aeronautics & Astronautics
Stanford University

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About Composites Design Tutorial:

Composites Design Tutorial is a series of internet course offered through WebEx. The course is taught by a team of world-class experts. Tutorial 1 was held from September 4 to November 20, 2007, Tutorial 2 was held from April 8 to June 24, 2008 and Tutorial 3 from September 2 to November 18, 2008. The course consists of 12-weekly intensive sessions with western and eastern worlds covered by 8 AM and 8 PM classes per session on Tuesdays. Each lecture is 2 hours long and includes question and answer session. 2-hour software demonstration session is held every Monday and native language sessions are held on Wednesday, Thursday and Friday. The tutorial and book are sponsored by JEC Composites. The book and supporting presentation and software are distributed free to all participants of tutorial on demand and downloadable. Materials are suitable for practicing engineers with and without prior experience in composites, and also suitable to support professors interested in teaching a course in composites.

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Department of Aeronautics & Astronautics
Stanford University, Stanford, CA 94305-4035

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Our Theory of Composites Design, originally published by Think Composites in 1992, and subsequently revised in 2002 and 2008, covers the mechanics of composites and its application to design. In the third section of this book, we have five sets of viewgraphs outlining the approaches and numerical examples of design tools.Â Strength & Life of Composites (Hard-bound, 672 pages with colored illustrations). Illustrations from the book are as follows: Figure 1. Comparison between maximum interfacial normal tractions in the random and regular arrays due to transverse tension. Widespread use of composite materials across many industries has created a need for modeling tools to accurately predict the behavior of structures comprised of these materials. In many applications, composite fatigue life is the primary factor limiting the design of a structure. However, commercial tools for predicting composite fatigue life have not been available. We present a multiscale physics-based fatigue life prediction methodology for composite structures that is computationally efficient, requires minimal fatigue characterization, and accounts for arbitrary loads and load histories.