

Preface

The aim of this book is to provide a systematic description of pressure and temperature sensitive paints (PSP and TSP) developed since the 1980s for aerodynamics/fluid mechanics and heat transfer experiments. PSP is the first global optical technique that is able to give non-contact, quantitative surface pressure visualization for complex aerodynamic flows and provide tremendous information on flow structures that cannot be easily obtained using conventional pressure sensors. TSP is a valuable addition to other global temperature measurement techniques such as thermographic phosphors, thermochromic liquid crystals and infrared thermography. This book mainly covers research made in the United States, Japan, Germany, France, Great Britain and Canada. Excellent work on PSP in Russia has been described in the book “Luminescent Pressure Sensors in Aerodynamic Experiments” by V. E. Mosharov, V. N. Radchenko and S. D. Fonov of the Central Aerohydrodynamic Institute (TsAGI).

We are truly grateful to our colleagues in the field of PSP and TSP for kindly providing their paper drafts, offering comments, and allowing us to use their published results. Without their helps, this book cannot be completed. Especially, we would like to thank the following individuals and organizations:

T. Amer, K. Asai, J. H. Bell, T. J. Bencic, O. C. Brown, G. Buck, A. W. Burner, S. Burns, B. Campbell, B. F. Carroll, L. N. Cattafesta, J. Crafton, R. C. Crites, G. Dale, R. H. Engler, R. G. Erausquin, W. Goad, L. G. Goss, J. W. Gregory, M. Gounterman, M. Guille, M. Hamner, J. M. Holmes, C. Y. Huang, J. P. Hubner, J. Ingram, H. Ji, R. Johnston, J. D. Jordan, M. Kameda, M. Kammeyer, J. T. Kegelman, N. Lachendro, J. Lepicovsky, Y. Le Sant, X. Lu, Y. Mebarki, R. D. Mehta, K. Nakakita, C. Obara, D. M. Oglesby, T. G. Popernack, W. M. Ruyten, H. Sakaue, E. T. Schairer, K. S. Schanze, M. E. Sellers, Y. Shimbo, K. Teduka, S. D. Torgerson, B. T. Upchurch, A. N. Watkins.

NASA, ONR, AFOSR, Boeing, Raytheon, Japanese NAL.

Pressure and Temperature Sensitive Paints

Liu, T.; Sullivan, J.P.

2005, XII, 328 p. 258 illus., 25 illus. in color., Hardcover

ISBN: 978-3-540-22241-5