

ACKNOWLEDGMENTS

I would like to thank Professor Murakami, Institute of Engineering Mechanics, University of Tsukuba, for many stimulating discussions and fruitful suggestion on the theoretical and experimental aspects of the subject matter of this Ph.D.thesis.

I also would like to thank the Committee members, Professor K. Matsuuchi, Professor T. Kawai, Associate Professor H. Shouji, and Associate Professor M. Nishioka, Institute of Engineering Mechanics, University of Tsukuba, for their important advice to write this thesis.

And I would especially thank to express to Professor K.Maeno, Department of Mechanical Engineering, Faculty of Engineering, Chiba University and Jec Torisha, Co. Ltd., for their variable suggestion and support on the occasion of design the superfluid shock tube facility

Thanks are also due to the colleague of Murakami laboratory, especially to Mr. Yang, Miss. Takano and Mr. Ueta for his experimental support.

The financial support for the Ph.D. has been given by Research Fellow of the Japan Society for the Promotion of Science. And this experiment is financially supported by Grant-in-Aid for Scientific Research (A) (06555290) and (11305068).

Finally, I would like to thank my family for their positive support and encouragement through the long years of graduated study for Ph.D.