PREFACE

Lifetime engineering of civil infrastructures such as bridges, highway networks, etc. is becoming one of the most important issues in the sustainable development of societies in all over the world. Structural health monitoring (SHM) system has been concerned in many advanced countries for long-term management of civil infrastructures. In case of existing bridges, as there are huge amount of stock of short- and medium-span bridges, bridge condition assessment such as safety evaluation, remaining life prediction is becoming one of the most important research topics for evaluating bridge performance of not only bridge management system but also bridge health monitoring system. The bridge health monitoring with information technology and sensors is capable of providing more accurate knowledge of bridge performance than traditional methods. The civil structural health monitoring (CSHM) workshop was established to discuss how to develop an IT-based bridge health monitoring system incorporate with the latest information technologies for lifetime management of existing bridges, and how to manage a data collecting system designed for bridge health monitoring.

The previous (4^{th}) CSHM-4 workshop was held in Berlin, November 6-8, 2012. The major concerns in this workshop focused on the different aspects related to structural health monitoring and provide a forum for efficient exchange of ideas about the extension of the civil infrastructure's service life. Among many topics, the latest information processing technologies and intelligent structural health monitoring techniques applied to civil infrastructure management were presented. The workshop has given us an excellent opportunity to establish fruitful international collaboration between the participants and their organizations, and to discuss the challenges we are facing with the ageing civil infrastructures.

The 5^{th} International Workshop on Civil Structural Monitoring (CSHM-5) is held at International Hotel Ube (Kokusai Hotel Ube), Ube, Yamaguchi, Japan, October 24-26, 2013. The major concerns in the workshop will focus on the structural health monitoring and maintenance of short- and medium-span bridges. That is, it will be discussed the rational health monitoring system for short- and medium-span bridges, for example using a moving vehicle such as truck, bus, train, etc, and also the related topics on maintenance strategies for them from various points of view.

We believe that the workshop might make an excellent opportunity to discuss the new challenges of future international collaborations.

This book contains 17 papers (7 keynote papers and 10 general papers), that were presented by distinguished researchers and practicing structural engineers in the field, at the **CSHM-5 workshop**. Topics of the contributed papers cover not only

short- & medium-span bridge monitoring by moving vehicle but also maintenance strategies for short- & medium-span bridges for managing in good condition based on monitoring information during their whole lifetime.

Finally, we would like to express our sincere thanks to all authors and speakers for their high quality papers and presentations. We would also like to thank the council of ISHMII(The International Society for Structural Health Monitoring of Intelligent Infrastructure), the Yamaguchi University Foundation (YUF), the Research Center for Environmental Safety (RCES) of Yamaguchi University, KOZO KEIKAKU Engineering Inc., the REHATEC Research Group members and the Electric Technology Research Foundation of Chugoku for sponsoring the workshop. We also thank Prof. G. Watanabe of Yamaguchi University, Mr. T. Suzuki of REHATEC Research Group, Ms. M. Kochi of Yamaguchi University, Ms. R. Widyawati, PhD student of Yamaguchi University, and all students in the Infrastructure Maintenance Engineering Laboratory of Department of Environmental Science and Engineering at Yamaguchi University for their great efforts in organizing the event.

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