

Special issue on Prognostics and Health Management (PHM) in Smart Structures and Systems

Preface

Prognostics and Health Management (PHM) is an engineering discipline that addresses the technique to install sensors at the critical components of structural or mechanical systems, monitor real time the fault signal from the various sensors, diagnose their severity, and predict the failure time based on up-to-date information, by incorporating various disciplines including sensing technologies, physics of failure, machine learning, modern statistics, and reliability engineering. The PHM technique enables the prevention of catastrophic accidents and condition based maintenance which reduces the operation cost greatly as opposed to the current periodic maintenance strategy.

To consolidate existing knowledge in this area, the first edition of the Asia Pacific Conference of the Prognostics and Health Management (PHMAP 2017) took place in Jeju, South Korea, on July 12-15, 2017. The PHMAP 2017 addressed the new development in all aspects of related technologies, including advances in sensing technologies, detection, diagnosis, and prognostics of failure modes, PHM-enabled structural health monitoring and control, Residual useful life (RUL) prediction based on health and degradation modeling, and PHM system design, performance assessment and validation.

From this successful conference, thirteen papers are selected for this special issue after the rigorous review process. The papers covers a wide spectrum of the subject that includes structural damage detection and monitoring, energy harvesting, RUL prediction, gear fault diagnostics and a new sensing technologies for PHM and NDE, which reflects the broad ranges of the topics covered in PHMAP 2017.

Acknowledgments are due to the various sponsors of PHMAP 2017. Acknowledgements are also due to all the authors and co-authors of this issue for their contribution, to the reviewers for their time and collaboration, and to SSS editor-in-Chief and staffs for the support to this special issue.

Guest Editors:

Gyuhae Park
Chonnam National University, Korea
(gpark@jnu.ac.kr)

Seungchul Lee
Pohang University of Science and Technology, Korea
(seunglee@postech.ac.kr)

Christian Gogu
Université de Toulouse, France
(christian.gogu@univ-tlse3.fr)

Chao Hu
Iowa State University, USA
(chaohu@iastate.edu)