

The Department of Mechanical Engineering/College of Engineering and Applied Sciences
Stony Brook University

Mechanical Engineering Seminar



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Lecture Title: Optical Profilometry and Expectations for “Optomechatronics”

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Abstract

In recent years, the technique of non-contact three-dimensional profilometry has found wide acceptance in fields such as mechanical engineering, car industry, aircraft industry, machine tool industry and design engineering, electronic engineering, semi-conductor industry, and medical fields. In this presentation, the principles and applications of the technique will be discussed with emphasis on pattern projection methods. In addition to outer surface profile measurement, inner profile measurement techniques for pipes and holes will also be introduced. Because of the power and widespread application of optical techniques in mechanical engineering fields and the need to use electronics, there is an emerging field called “optomechatronics” which combines the fields of optical engineering, mechanical engineering, and electronic engineering. This concept is becoming widespread in Japan, and some topics and examples of this new field will be presented with expectations for future development.

Biography

Toru Yoshizawa received his BS, MS and Doctor of Engineering degrees in precision engineering from the University of Tokyo. After 10 years of research and educational work at Yamanashi University, he moved to the Tokyo University of Agriculture and Technology, where he was professor in the Department of Mechanical Systems Engineering for 25 years. After retirement from this university, he worked in industry for three years and then moved to Saitama Medical University to initiate the Department of Biomedical Engineering. Currently he is professor in this department of the Saitama Medical University and Professor Emeritus at the Tokyo University of Agriculture and Technology. He is one of the founders of SPIE Japan Chapter and served as Chapter Chair for 10 years, and is a fellow of SPIE. His research field covers optical metrology and optomechatronics. Recently he edited a book entitled “Handbook of Optical Metrology: Principles and Applications” (Taylor & Francis, March 2009).

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