工学系研究科専攻間横断型教育プログラム
「機械システム・イノベーション」

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THE UNIVERSITY OF TOKYO

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Microelectromechanical Vibration Energy Harvesters

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Lecturer:
Einar Halvorsen received the Siv.Ing. degree in physical electronics from the Norwegian Institute of Technology (NTH), Trondheim, Norway, in 1991, and the Dr.Ing. degree in theoretical solid state physics from the Norwegian University of Science and Technology (NTNU, formerly NTH), Trondheim, Norway, in 1996. After a postdoc position at the University of Oslo and five years in industry, he joined Vestfold University College, now University College of Southeast Norway, in Horten, Norway where he is a professor of micro- and nanotechnology. His main research interest is in theory, design, and modeling of microelectromechanical devices.

Abstract:
This talk presents the principles of vibration energy harvesters and how such devices can be realized using the most common transduction mechanisms. It is an important question how much power can be obtained from a device and there are often challenges in making harvesters that adapt well to different vibration excitations. Without making a detailed design, it is still possible to obtain estimates on what is the most power one can hope for in limiting cases. These fundamental performance bounds are higlighted and used to indicate what are the important factors for performance. A number of electrostatic microelectromechanical vibration energy harvesters are presented and discussed with emphasis on how they are made to perform well with different excitations.

主催: 東京大学大学院工学系研究科「機械システム・イノベーション」プログラム（GMSI）
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