



Keynote speaker:

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Title of the Presentation:
**Wafer-Level Metal Bonding for
MEMS/MOEMS devices**

Biography: Dr. Vesa Vuorinen received his M.Sc. degree 1995 in Materials Science and Engineering and D.Sc. (Tech.) degree in 2006 in the Department of Electronics from the former Helsinki University of Technology. During the last decade, his research has been focusing on materials compatibility in heterogeneous systems with the emphasis on interfacial phenomena. He has also been responsible for teaching physics of failure and reliability assessment in electronics and direct research cooperation with the industrial partners for the last twenty years. He has been involved in the creation of international electronics assembly technology standards (IEC) and contributed to two text books dealing with interfacial compatibility issues and thermodynamics of solid state diffusion as well as authored or co-authored over 50 scientific papers and several book chapters

Abstract: Functional structures utilized in Micro Electro Mechanical Systems (MEMS/MOEMS) have to be electrically connected and hermetically encapsulated. Wafer-level (WL) bonding through 3D-integration enables multi-sensor fusion with logic in a vertical high-speed package. The major driving forces for the optimal WL- metal bonding methods are the enhanced performance due to higher vacuum, possibility of further downsizing and simultaneously providing vertical electrical interconnections when utilizing through silicon vias (TSVs). However, such complex levels of integration require a thorough understanding, for example, on the manufacturing processes integration, the influence of residual stresses and trace impurities on sensitive MEMS/MOEMS devices.