



## **Prof. Tadatomo Suga**

### **Meisei University**

#### **Title:**

Surface activated bonding for micro system integration

#### **Abstract:**

The surface activated bonding (SAB) has been developed as a potential method for heterogeneous bonding at room temperature, attracting increasing interest due to its simple process flow, no need for additional intermediate materials for bonding, and compatibility with CMOS technology. The standard SAB method is based on surface bombardment by Ar beam in ultra-high vacuum to clean the surfaces so that they can be bonded very strongly at room temperature without heat treatment. The standard SAB, however, failed to bond some dielectric materials, such as glass and silicon oxide. A modified SAB was developed to solve this problem, by using an intermediate layer of Si, metals, or even metal oxide deposited on the activated surfaces. This modified SAB is now applied to bond not only SiO<sub>2</sub> glasses but also polymer films such as PEN and Polyimide, as well as WBG semiconductor wafers to diamond substrate with a wide perspective of the applicability on heterogeneous integration for various microsystems.

#### **Biography :**

Tadatomo SUGA, Professor, Meisei University

He joined the Max-Planck Institut für Metallforschung in 1979, obtained his Ph.D. degree in materials science from University of Stuttgart in 1983. Since 1984 he has been a faculty member of the University of Tokyo, and has been a professor in the Department of Precision Engineering of the School of Engineering since 1993. He has been also the Chair of IEEE CPMT Society Japan Chapter, and the President of the Japan Institute for Electronic Packaging, as well as the Chair of JSPS University-Industry Cooperative Research Committee for Innovative Interface Bonding Technology. His research focuses on microelectronics and microsystems packaging, and development of key technologies related to low temperature bonding and interconnects. In the March of 2019, he retired from the University of Tokyo, being Professor Emeritus, and joined Meisei University to continue his research work.