

Watanabe Lab., Applied Surface Science Group, Dept. of Material & Life Science, Division of Advanced Science and Biotechnology, Graduate School of Engineering

Research Field

In our group we aim to develop and characterize advanced electronic materials and processes for next-generation semiconductor devices.

The topics of our research are atomic-scale characterization and investigation of formation mechanism of interface structure between gate insulator materials and Si substrates in VLSI, research of new materials for gate insulator and electrode, and development of low-temperature and high-efficiency surface treatment techniques by atmospheric-pressure plasma. We also investigate bio-nano processes.

In these researches we use SPring-8, which is the world's largest third-generation synchrotron radiation facility, and collaborate with semiconductor companies for research and development at the leading edge of semiconductor industries.

Research Topics

- Development and Characterization of Gate Stack Structure in Next-generation VLSI
- Research of Surface Process and Insulator Technology for Wide Band Gap Semiconductor
- Study of Si-Ge Alloy for the Next-generation Semiconductor Devices
- Development of Characterization Technique of Nano-structure by Synchrotron Radiation
- Reliability Characterization of the Advanced Semiconductor Devices
- Development of Surface Process Technology by Atmospheric Pressure Plasma
- Development of New Functional Devices using Bio-nano Processes

Staff	Prof.	Heiji Watanabe	(tel 06-6879-7280, watanabe@mls.eng.osaka-u.ac.jp)
	Associate Prof.	Takayoshi Shimura	(tel 06-6879-7281, shimura@mls.eng.osaka-u.ac.jp)
	Assistant Prof.	Takuji Hosoi	(tel 06-6879-7282, hosoi@mls.eng.osaka-u.ac.jp)

Homepage http://www-asf.mls.eng.osaka-u.ac.jp/e_index.html