

PREFACE

This annual report reviews the research activities of the Laboratory of Advanced Science and Technology for Industry (LASTI) in the academic year of 2008 (April 2008 –March 2009) including activities using a 1.5GeV synchrotron radiation facility “ NewSUBARU ” at the site of Spring-8 and other research activities of the micro and nanoscale are carried out energetically in CAST building.

Topics of the NewSUBARU research activities of this year are as follows. First is the basic characteristic research of NewSUBARU electron storage ring and Gamma-ray generation by laser Compton backscattering. The second is EUV (extreme ultraviolet) activities that are a microscope using an EUV beam splitter, pattern replication in EUV interference lithography, and EUV resist with low LER(Line edge Roughness). BL09C beamline was branched from BL09B beamline for usage of the EUV interference lithography for evaluation of the exposure characteristics of EUV resist. Third is micro- and nano-devices such as a high-density cell culture using micro 3D scaffold and X-ray grating for X-ray phase grating. Fourth is the material science for various materials such as DLC, Au-SrTiO₃, Zn-Al alloys, and TiO₂.

Furthermore, the performance of material analysis beam line BL5 for industrial enterprises was evaluated by NEXAFS spectra measurements using the standard samples of graphite and BN.

Most of our research activities are being conducted in collaboration with industries, government research institutes and other universities.

We will continue to respond to the community’s demand by offering new science and technologies.



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