

Division of Biomaterials and Bioengineering

Department of Oral Rehabilitation

Outline

Main research focus in the department is to develop novel biomaterials and biodevices for improving health of patients with oral and craniofacial diseases. Specifically, we are investigating the surface modifications of medical and dental devices to enhance cell and tissue compatibility, and also to provide the surface with an antibacterial property using various chemical, biochemical, and physical methods. The department encourages an open laboratory concept. All facilities and equipments (XPS, micro-XRD, Laser Raman Spectroscopy, FT-IR, SEM/EDX, SPM, ICP-AES, EIS, etc., see next page) are available for use by all researchers and graduate students in Health Sciences University of Hokkaido. Our research interests are shown below.

Faculty members

Professor; Kazuhiko Endo B.E., M.E, Ph.Ds. in Dentistry & Engineering

Associate professor; Takashi Nezu B.S., M.S., Ph.D. in Science

Assistant professor; Futami Nagano-Takebe B.Dent., Ph.D. in Dentistry



Kazuhiko ENDO



Takashi NEZU



Futami NAGANO-TAKEBE

Postgraduate students

Akashlynn Badruddoza Dithi B.D.S.

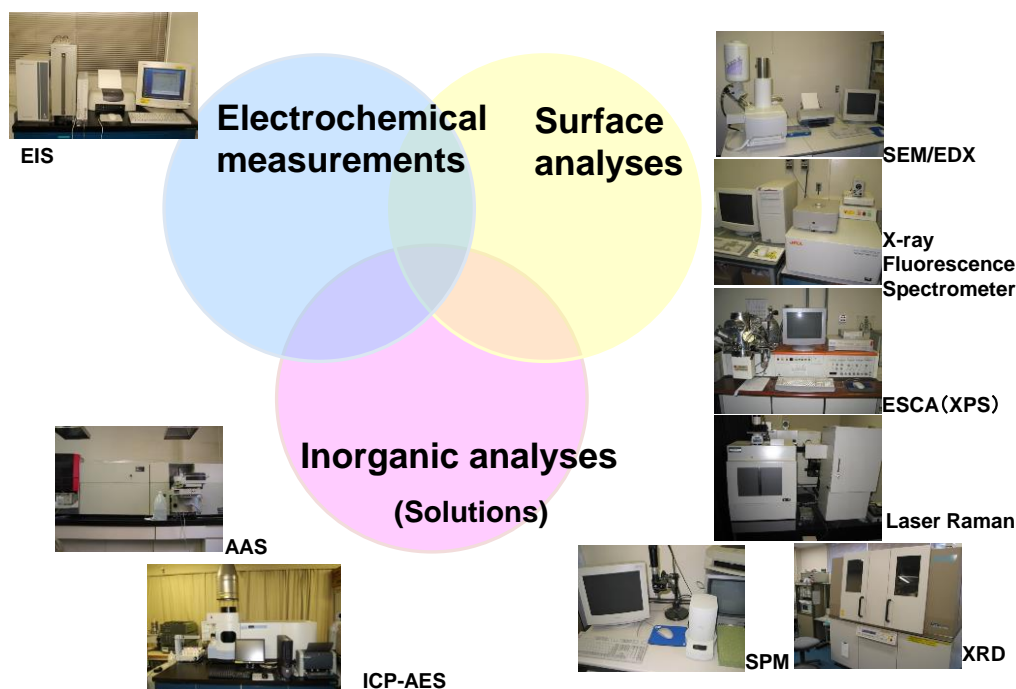


BADRUDDOZA DITHI Akashlynn

Main research in progress

- 1) Chemical and physical modifications of implant surfaces for promoting desirable cell and tissue responses
- 2) Degradation of metallic surgical implants and biological responses
- 3) Application of electrochemical techniques for evaluating the corrosion resistance of metallic biomaterials
- 4) Physico-chemical analyses of attached functional molecules on the biomaterials surface

Apparatus for instrumental analyses



Current publications

- *D. Ito et al. Biological activation of zirconia surface by chemical modification method with IGF-1. *J Biomed Mater Res, Part A* 102, In press.
- *M. Kono et al. NaOCl-mediated biofunctionalization enhances bone-titanium integration. *Dent Mater J* 34, In press.
- *S. Nakagaki et al. Effects of CO₂ laser irradiation combined with fluoride application on the demineralization mechanical properties, structure, and composition of enamel. *Dent Mater J* 34: 287-293, 2015.
- *M. Iijima et al. Bioactive glass coating of orthodontic materials for the recovery of mechanical properties of etched enamel. *J Biomater Tissue Eng* 4, 274-280, 2014.
- *F. Nagano-Takebe et al. Inhibition of initial bacterial adhesion on titanium surfaces by lactoferrin coating. *Biointerfaces* 9: 1-7, 2014.
- *M. Hashimoto et al. Responses of RAW264.7 macrophages to water-dispersible gold and silver nanoparticles stabilized by metal-carbon σ -bonds. *J Biomed Mater Res, Part A* 102: 1838-1849, 2014.
- *M. Hashimoto et al. Evaluation of silver nanoparticle toxicity to RAW264.7 cells in a three-dimensional cell culture. *Biomater Tissue Eng* 4: 51-58, 2014.
- *M. Kaga et al. Inhibition of enamel demineralization by buffering effect of S-PRG filler-containing dental sealant. *Eur J Oral Sci* 122: 78-83, 2014.
- *K. Kakino et al. Visualization study on distortion of a metal frame by polymerization shrinkage and thermal contraction of resin. *Dent Mater J* 33: 118-124, 2014.
- *N. Takasusuki et al. In vitro corrosion of dental Au-based casting alloys in polyvinylpyrrolidone-iodine solution. *Dent Mater J* 32:390-397, 2013.
- *M. Hashimoto et al. Micromorphological cellular responses of MC3T3-E1 and RAW264.7 after exposure to water-dispersible silver nanoparticles stabilized by metal-carbon σ -bonds. *Dent Mater J* 32: 725-733, 2013.
- *H. Ohno et al. Analysis of residual stress in the resin of metal-resin adhesion structure by scanning acoustic microscopy. *Dent Mater J* 32(6), 920-927, 2013.
- *M. Iijima et al. Crystal growth on bioactive glass sputter-coated alumina in artificial saliva. *Dent Mater J* 32(5), 775-780, 2013.