

Division of Electrical Engineering and Computer Science	Research field	Optical and Electronic Sensing	Lab. ID EC13
Laboratory web site	http://oes-lab.w3.kanazawa-u.ac.jp		
Research subjects			
<p>Optical technology is widely used for optical disc systems and long-haul optical communication systems, and is also expected to be applied in high-sensitivity and highly-accurate optical sensing system. The features of optical sensing systems are capability of remote sensing, non-contant sensing, immune to electromagnetic field, and high-sensitivity by utilizing interference of lightwave. The keyword of our laboratory is "Measurement by Lightwave". We are developing optical FMCW ranging system for characterization of long optical fibers and for object profiling in micrometer and nanometer scale. Our optical FMCW ranging system can be also applied to three-dimensional scanners and laser laders for vehicles.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Master/Doctor students should be good models to all students in laboratory, and are expected to be leaders in academics and companies after graduation. Active research is requested for M.E and Ph.D degrees. Through active and continuing discussion with a upervier, Master/Doctor students plan their research readmap and approach, do experiments according to the research plan, check and consider the results, and plan following research approach for improvement. Students should present their research every week to all the laboratory members (Professor and students) using slides.</p>			
Daily life in the laboratory, etc.			
<p>Optical sensing technology is studied in this laboratory, and I am studying lasers, lightwave technologies, electronic circuits and signal processing to develop optical sensing technology. (M2) A professor is very familiar and kindly supervise and stimulate us. We are studying actively and enjoying our research. (M1)</p>			
Message or comments by the laboratory faculty staffs			
<p>It is very important to understand basics and principles in your study because current technologies will be replaced with new technologies in near future. Please friendly compete with your colleague in our laboratory, and enjoy your research. Please develop your communication skill and technical writing skill in English and your mother language.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Linearizing optical frequency sweep of a laser diode for high resolution FMCW optical sensing system		
2017.3	Development of highly accurate FMCW optical ranging system and its application to object profiling		
2016.3	Development of FMCW optical sensing system using photodetector array		
2016.3	Development of high speed Si optical receiver using standard CMOS process		
2015.3	Development of highly accurate FMCW optical sensing system and its application to object profiling		
2015.3	Development of high-speed Si photodiodes fabricated by standard CMOS process		
2015.3	Fabrication of guided-wave optical devices for polymer lightwave circuits		
2014.9	Development of remote object profiling using FMCW optical ranging system		
2014.3	A study on high-speed photoreceiver utilizing standard CMOS process		
2014.3	Fabrication and characterization of organic optical waveguide using PET-G		
2013.3	Fabrication of Ta <sub>2</sub> O <sub>5</sub> optical waveguides by spin-coating method		
2013.3	A study on polystyrene optical waveguides doped with Nd complex		
2012.9	A study on optical waveguides and lightwave circuits using photosensitivity epoxy resin		
Recent Doctoral theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Characterization and Optimization of Avalanche Photodiodes Fabricated by Standard CMOS Process for High-speed Photoreceivers		
2016.3	A novel technique of optical frequency sweep linearization of a DFB laser for high resolution FMCW reflectometry		
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