

# 2019 Nagaoka Summer School for Young Engineers (NASSYE)

## List of Research Topics

### Material Science and Technology

Department website: <https://mst.nagaokaut.ac.jp/en/>

<b>Research Topic</b>	Observation of nano-structured surface by field emission type scanning electron microscope equipped with energy dispersive X-ray and electron back scattered diffraction apparatus
<b>Instructor</b>	SAITO, Nobuo
<b>Assistant Instructor</b>	
<b>Contents</b>	The aim of this theme is to understand how to observe and analyze a nano-structured surface structure by scanning electron microscope equipped with EDS and EBSD. As observation samples, metals, metal oxides, and organic materials are used.
<b>Required skills/ Remarks</b>	

<b>Research Topic</b>	Colorimetric detection of an ultra-trace harmful ion in environmental water with a nanostructured sensor
<b>Instructor</b>	TAKAHASHI, Yukiko
<b>Assistant Instructor</b>	
<b>Contents</b>	During summer school a student will able to - study the poisonous properties and environmental burden of legally regulated ions (mercury, lead, cadmium, arsenic, etc.) - fabricate a specific dye nanoparticle coated test strip for a target ion - observe the morphology of dye nanoparticle by surface analysis - detect a target ion with his/her own test strip - analyze the color change by colorimetric device
<b>Required skills/ Remarks</b>	

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<b>Research Topic</b>	Preparation and analysis of sustainable materials sourced from biomass wastes and industrial ones.
<b>Instructor</b>	KOBAYASHI, Takaomi
<b>Assistant Instructor</b>	
<b>Contents</b>	This course focuses on preparation and analysis of sustainable materials sourced from biomass wastes and industrial ones, especially on sugarcane and seaweed wastes and also fly ash for inorganic geopolymers.
<b>Required skills/ Remarks</b>	