The 19th Clayteam Seminar

"Tohoku-Tokyo Dream Project toward 2020"

Date and Time: Nov. 18, 2014 (Tue.)13:00-17:50 *Reception Starts 12:30-
Venue: Meeting Room 1, Bio-IT Research Building (11th Floor), AIST Tokyo Water Front
2-3-26 Aomi, Koto-ku, Tokyo, 135-0064, Japan
***Language: Japanese**

[Program]

13:00-13:10 The 19th Clayteam Seminar
【The Opening Remark】

13:10-14:10【Chairperson】Dr. Ryo Ishii, AIST
Speaker1 Keynote
"Introduction of Tokyo Metropolitan Industrial Technology Research Institute (TIRI)"
Kou Harada (Director, Tokyo Metropolitan Industrial Technology Research Institute (TIRI))

14:10-14:40 Speaker2
"Chance!! The 2020 Tokyo Olympic and Paralympic Games"
Yasuyuki Hanada (Deputy Director General, AIST Tokyo Waterfront)

14:40-15:10 Speaker3
"Research and development of running-specific prostheses for 2020 Tokyo Paralympic"
Hiroaki Hobara (Research Scientist Digital Human Research Center, AIST)

15:10-15:40 【Chairperson】 Dr. Hiromichi Hayashi, AIST
Speaker4
"Development of Cr-N thin film strain sensors and their application to the robots"
Eiji Niwa (Executive Chief Research Scientist, Group leader, Sensor Materials Group, R & D Department, Research Institute for Electromagnetic Materials)

15:40-16:10 Speaker5
"Your garbage will be the Olympic flame!"
Chika Tada (Associate Professor, Graduate School of Agricultural Science, Sustainable Environmental Biology Lab.)

16:10-16:40 Speaker6
"8K Super-Hi-Vision broadcasting system and a development of flexible OLED displays"
Genichi Motomura (Advanced Functional Devices Research Division, Science & Technology Research Laboratories Japan Broadcasting Corporation (NHK))

16:45 【The Closing Remark】

[Get-Together-Reception]
Venue: Precious Tokyo Bay, Telecom Center (EAST 21F)
Fee: 5,000yen

The 19th Clayteam Seminar

<Short Abstract>

[Speaker1] **"Introduction of Tokyo Metropolitan Industrial Technology Research Institute (TIRI)"**
Kou Harada (Director, Tokyo Metropolitan Industrial Technology Research Institute (TIRI))

[Speaker2] **"Chance!! The 2020 Tokyo Olympic and Paralympic Games"**
Yasuyuki Hanada (Deputy Director General, AIST Tokyo Waterfront)

AIST Tokyo Waterfront and hosts "Tokyo Waterfront District Industry-Academia-Government Collaboration Forum" to promote cooperation among companies, universities, and public institutions in this waterfront district that are aiming for innovation as we head toward the 2020 Tokyo Olympic and Paralympic Games under the Tokyo Metropolitan Industrial Technology Research Institute (TIRI) and cosponsorship. Introduce the outline and activity.

[Speaker3] **"Research and development of running-specific prostheses for 2020 Tokyo Paralympic"**
Hiroaki Hobara (Research Scientist Digital Human Research Center, AIST)

Recent technical developments in carbon fiber running-specific prostheses (RSPs) with energy storing capabilities have allowed individuals with lower extremity amputation (ILEA) to compete at levels achieved never before. Not surprisingly, there are a lot of ILEA sprinters who are able to run faster and achieve longer jumps than able-bodied athletes. The phenomenon may exemplify how amputee sprinters work hard with high motivation, and how current prostheses have advanced. This presentation describes the history, classification, and regulations of RSPs, and current world records in athletic ILEA. Finally, current problems regarding the material to develop RSPs are presented.

[Speaker4] **"Development of Cr-N thin film strain sensors and their application to the robots"**
Eiji Niwa (Executive Chief Research Scientist, Group leader, Sensor Materials Group, R & D Department, Research Institute for Electromagnetic Materials)

The safety to a person is required to a partner robot and a power assist apparatus. In other words, flexibility and instant ability for collision avoidance are necessary at the time of the contact with the person, but, on the other hand, enough solidity to support a person and the movement is also necessary. A control system having high response speed consisting of high stiffness mechanical components and high sensitive sensors is important for that purpose. Using metal strain gauges is suitable for the measurements of force, torque, and so on because those are low cost, stable to temperature change and simple and easy way to use, but the conventional strain gauges are not able to show enough performance for the high stiffness mechanical components because of its low sensitivity. The Cr-N thin film strain sensor which has been developed by Research Institute for Electromagnetic Materials shows the sensitivity of 4-7 times larger than that of the

conventional gauges and improves the performance of the system successfully. In this presentation, the Cr-N thin film strain sensor and examples of the application will be introduced**.**

[Speaker5] **“Your garbage will be the Olympic flame!”**
Chika Tada (Associate Professor, Graduate School of Agricultural Science, Sustainable Environmental Biology Lab.)

Biogas can be produced from food garbage and other available wastes. A new café that serves tea warmed with biogas made from food garbage brought in by its customers has opened: ‘ene café METHANE’. Now, we hope that the Olympic flame in Tokyo in 2020 will burn biogas made from our garbage.

[Speaker6] **“8K Super-Hi-Vision broadcasting system and a development of flexible OLED displays”**
Genichi Motomura (Advanced Functional Devices Research Division, Science & Technology Research Laboratories Japan Broadcasting Corporation (NHK))

The ultra-high-definition TV in a next-generation broadcasting system known as 8K Super-Hi-Vision (SHV) has been developed. Flexible displays have attracted a great deal of attention as a next-generation display for SHV because they have excellent characteristics, such as ultra-thinness, light-weightiness, and flexibility. In this presentation, we introduce SHV and the flexible OLED display which has been developed for the large-size sheet-type displays.