

(For JSPS Fellow)

Form B-5

Date (日付)

05/01/2015 (Date/Month/Year: 日/月/年)

Activity Report -Science Dialogue Program-
(サイエンス・ダイアログ事業 実施報告書)

- Fellow's name (講師氏名): Aymeric RAMIERE _____ (ID No. P15728)

- Participating school (学校名): Tokyo Metropolitan High School of science and technology
(Koto-ku)

- Date (実施日時): 16/12/2015 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): Heat from macroscale to nanoscale
(in Japanese) N/A

- Lecture summary (講演概要): Please summary your lecture 200-500 words.
 The propagation laws of heat at macroscale (i.e. objects visible with naked eye) have been well known since the 19th century. For example, the Fourier law describing the heat conduction inside an object is known since 1822. Nowadays we all use electronic devices such as computers, smartphones and tablets. These devices work thanks to microprocessors composed of billions of transistors with sizes of a few tens of nanometers (1000 times smaller than a human hair). At the nanoscale the Fourier law doesn't apply anymore. Today, despite the large standardization of electronic devices, a conduction law in nanoscale materials is still missing. My work as a postdoctoral researcher at the University of Tokyo is to carry an experiment to understand the heat propagation in nanomaterials.
 During this presentation, we will introduce the concept of temperature from the history of temperature scales to the more complex definition in terms of energy at nanoscale. We will see how heat propagates from a hot material to a cold one and why the propagation properties change when we go to the nanoscale. Finally, around half of the energy humankind produces is wasted as heat. An application of our research is to create high performance thermoelectric modules able to convert heat into electricity.

- Language used (使用言語): English

- Lecture format (講演形式):
 - ◆Lecture time (講演時間) 90 min (分), Q&A time (質疑応答時間) 15 min (分)
 - ◆Lecture style (ex.: used projector, conducted experiments)
 (講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))
used projector and 10min for one experiment

- ◆ Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

Japanese accompanied person explained briefly in Japanese

- ◆ Name and title of accompanied person (同行者 職・氏名)

Ryoto Yanagisawa, M1 student at The University of Tokyo

- ◆ Other note worthy information (その他特筆すべき事項):

- Impressions and opinions from accompanied person (同行者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。):

I appreciate for your invitation and I was very glad to join the dialogue. Many students are interested in our lecture and seem to enjoy it. Some of them tried to ask questions in English hopefully, but others looked having a bit hesitation to speak English especially science terms.

As Dr. Ramiere told them, science is one of most universal matter and often science is discussed in English. I think it is important for high school students to study science partially in English, for example learn technical terms in English. I was surprised some students have a very deep scientific knowledge, so I think they can enjoy English science. I hope students will achieve their own dreams