

(For JSPS Fellow)

Form B-5

Date (日付)

23/10/2014 (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): Tommi Tynell (ID No. P 14736)

- Participating school (学校名): Ichikawa Gakuen

- Date (実施日時): 14/10/2014 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): Thermoelectric Energy Harvesting and Its Role in Solving the Energy Crisis

(in Japanese)

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

At the beginning of the lecture I introduced Finland and some of my research background, but the main part of the lecture was about understanding how energy is produced, the structure of our energy production sector and what challenges are facing the field today and in the near future. The working principle of a number of energy production technologies from nuclear power to the combustion engine were briefly explained and the energy conversion steps involved were compared. The prevalence of the various energy production technologies and the resulting resource requirements and impacts on our environment were discussed. Specifically, the unsustainability of the current energy production strategies in terms of resource availability, climate change, or both was highlighted. Some potential solutions were discussed, and thermoelectric energy harvesting was introduced as a technology that could lead to more efficient usage of our energy resources through conversion of waste heat into usable electricity. The physical principles behind thermoelectric energy harvesting were explained and the limitations of the technology and the extraordinary efforts in materials science that are required to overcome them were discussed. Finally, to provide a more tangible idea of the capabilities of the technology, a number of applications already in use or being planned, based on the thermoelectric effect, were introduced.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 70 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))

Powerpoint presentation using a projector; no experiments were performed

◆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))

No interpretation was done in Japanese, at the request of the school

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

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◆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。):