

(For JSPS Fellow)

Form B-5

Date (日付)

03/03/2016 (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. P14736)

- Participating school (学校名): Okinawa Prefectural Kyuyo Senior High School

- Date (実施日時): 24/02/2016 (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) (no Japanese title)

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

At the beginning of the lecture I introduced some aspects of my home country, focusing on some of the differences between Finland and Japan. Afterwards I moved on to the main part of the lecture, which 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. To provide a more tangible idea of the capabilities of the technology, a number of applications based on the thermoelectric effect already in use or being planned were introduced, with a focus on the important role the technology plays in deep space applications. Finally, I talked about my career and life as a scientists and gave some advice to students that might want to become researchers themselves.

- Language used (使用言語): English, with some Japanese during questions

- Lecture format (講演形式):

◆Lecture time (講演時間) 50 min (分), Q&A time (質疑応答時間) 30 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))

The lecture consisted of a presentation using Powerpoint, but no teaching aids

◆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))

I provided some explanation in Japanese and answered questions in Japanese

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

N/A

◆Other noteworthy 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。): N/A