

(For JSPS Fellow)

Form B-5

Date (日付)

(Date/Month/Year: 05 日/11 月/2015 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): Claire Perfetti (ID No. P14812)

- Participating school (学校名): Okazaki High School

- Date (実施日時): 26/10/2015 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Sensor development in Materials Science

(in Japanese) 材料科学におけるセンサー開発

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

The lecture has been divided into two distinct presentations, one regarding my background and the other dedicated to my research area and the project I am currently involved in. A Questions&Answers session followed each presentation. After an introduction of myself, as a French people living in Belgium, I described my job at University and talked about my motivations for becoming a scientist and for living in Japan. I also mentioned why, from my point of view, learning English is really important.

After a short break the scientific contents of the lecture began with an introduction to Materials Science. The aim of this inter-disciplinary subject, located at the intersection of Physics, Chemistry and Technology, is to study the impact of material history of manufacturing on its structure and its corresponding properties and performance. The concept of material structures (crystalline and amorphous) has been introduced and the different families of materials have been presented, as metallic, ceramics, polymers and composites. In particular, the piezoelectric properties of materials defined as the reversible conversion of mechanical stress into an electric signal has been emphasis as it is a key feature of my JSPS project. Finally, a presentation of Scanning Electronic Microscopy has been proposed as it is one of the main characterization method to analyze material surface topography.

These definitions set a basis for the presentation of my research project, entitled development of a piezoelectric based sensor for monitoring skin healing process. The working principle of the sensor relies on the change of the physical properties of the skin (density, moisture, temperature...) during the recovery process of the biological tissues. The piezoelectric part of the sensor is one of critical item, and Zinc Oxide was the best candidate for this application. The chemical synthesis process has been detailed and the SEM analysis of the resulting film, composed by an array of nano hexagonal wires of Zinc Oxide, has been shown. The forthcoming steps of the project, in term of manufacturing and test, have been briefly discussed and the talk

finished with a second Questions&Answers session.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 15+30 min (分), Q&A time (質疑応答時間) 15+60min (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))

Projector used

◆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))

assistance by accompanied person (Japanese student from my lab)

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

Yuji Hirose (広瀬 雄治) second year graduate student (修士 2 年)

◆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。):

今回の講演では非常に簡単な通訳と科学知識の日本語での説明を手伝わせていただきました。事前に聞いていた話では、通訳としての役割のほうが大きいのと思っていましたが、科学知識の説明の方が大きく、愛知県立岡崎高校の生徒の質に驚きました。流暢な発音で、次々と専門的な科学知識についての質問が英語で飛び交い、非常に意義のある講演であったと思います。今回の同行の機会を頂き、非常に良い経験をできたことをうれしく思います。講演に関する意見としては、今回の様に2セッションに分かれていたことと、休憩時間で1対1で話す時間ができたことが多くの質問を喚起したのではないかと思います。ぜひこのような形で、今後も生徒とコミュニケーションをする機会が多いと良いと思います。