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（For JSPS Fellow）

Form B-5

Date（日付）
17/07/2015 （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）: Pablo Solís Fernández （ID No. P 13352）

- Participating school（学校名）: Saitama Prefectural Kawagoe Girls' Senior High School

- Date （実施日時）: 16/07/2015 （Date/Month/Year:日/月/年）

- Lecture title（講演題目）: Graphene. Or why the future of electronics may be in your pencil

（in Japanese）

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

During the first part of the lecture I briefly introduced myself and my home country, showing to the students the most prominent facts about Spain and Asturias. I also explained the reasons why I moved to Japan and why I choose to become a scientist. To encourage the students to engage in a scientific career, this first part ended with a highlight of the role of the women in science followed by a round of questions.

For the second part I gradually introduced the students to graphene, my topic of research. First I explained some generalities about the carbon atoms, showing how they can form chemical bonds with other atoms. The versatility of the carbon to form bonds give rise to the existence of materials which, although composed uniquely of carbon atoms, are completely different from each other, as in the case of graphite and diamond. With these two materials in mind, I tried to explain how the differences between them are directly related to the nature of the chemical bonds. Then I introduced graphitic materials of lower dimensionalities, namely fullerenes (0D), nanotubes (1D) and graphene (2D). I tried to remark the similarities between these materials and the graphite, and how graphene can be thought of as the basis for the rest of them. To finalize this part, I centered on graphene, starting from the ways that it can be obtained. After explaining about different approaches that allow to obtain graphene starting from graphite, I described the chemical vapor deposition method (CVD) that we employ in our laboratory.

The final part of the lecture started with a small experiment. Here the students learnt that graphite is a conductive material, and that the graphite contained in a pencil's lead can be used to design simple but functional electronic circuits on paper. Lastly I briefly explained some of the most relevant properties of the graphene and finished describing some of the potential uses that we can expect from it in the following years.

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- 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） 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））

Powerpoint presentation using a projector; the lecture was accompanied by a small 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））

The accompanying person assisted with translation to Japanese when required

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

Yuki Uchida, 2nd year master course student at Kyushu University

◆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。）:

本事業にて、SSH 指定の学校へ大学での研究についてしってもらう良い機会となったと思う。高校生の段階で、大学における理系教育と研究について知ることは重要で、その後の自身の専門の決定に大きく関わってくると考えられる。今回は材料科学の分野でホットな話題を分かりやすく説明できたので、一人でも多くの学生に材料科学の面白さが伝わったのではないかと思う。将来の専門分野の決定においては高校生の段階ではどの分野も選択することが出来る。しかし、どんな分野があり、どんなことを行っているのか少しでも把握できないと各分野での将来のキャリアパスが想像しにくいという理由から、一般的に人気のある分野へ学生が集中してしまう。このような問題を避けるためにも、サイエンスダイアログのような機会を通して、様々な分野について知ってもらうことが重要であると感じた。