

(For JSPS Fellow)

Form B-5

Date (日付)

31/1/2015 (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): BRETISLAV SMID (ID No. P 13754)

- Participating school (学校名): Jr. & Sr. High School at Komaba, University of Tsukuba, Tokyo

- Date (実施日時): 17/1/2015 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Exploring the Beauty of nanoworld
How to get a closer look at the surface of matters

(in Japanese) ナノワールド 美の発見

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

After basic introduction I talked about my homeland, the Czech Republic. I showed several pictures of Prague, the capital, as well as countryside, and also compared Czech Republic with Japan. I mentioned famous inventions and ideas created in my country and introduced representative people, like composers and writers.

In the main - scientific - part of the lecture, I was talking about nanotechnologies and their importance in our life. I introduced the concept of very small - nanoscaled - objects, and why we can observe their different properties comparing to bigger objects. During this part I also explained the importance of surface. I explained why scientists need special conditions (e.g. ultra-high vacuum) for conducting their experiments and for analyzing samples by using surface science techniques. In the middle of the talk I conducted two experiments. The students could easily perform one of them by themselves at home, as I encourage them. Next, I briefly described different techniques in exploring the nanoworld, showing some impressive images from scanning electron microscopes. Fuel cell principle was introduced briefly. I also brought a sample of nanomaterial (the nanowires with diameter of 35 nm) prepared at my host institute, safely sealed in the glass vial, to show to the students real material used in fuel cell applications on their own eyes, and showed them the SEM image of it for comparison.

Suzuki-san, who accompanied me during my lecture, expert in fuel cell field with long experience, showed students how components of real fuel cell device looks like and explained them in detail its function.

In the end of the lecture I was encouraging students in science and learning English, explaining

what great time and a beautiful country they live in, provided them an amazing opportunity in research with the best instruments and facilities. My encouragement for the students was supported by several quotes by great scientists of the history. Finally, some pictures from my travelling in Japan were shown. After the lecture I answered student's questions and distributed scientific books, booklets and materials, published under the head of my host institute to every student.

- 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) 20 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))

Lecture was prepared in Powerpoint and presented via projector on a screen. During the lecture I performed two experiments showing the power of atmospheric pressure and the "emptiness" of vacuum (using a small vacuum chamber connected with a pump). I also showed the real powder sample brought from my laboratory (safely sealed in the glass vial) and showed them how such sample looks like in scanning electron microscope. Suzuki-san showed to the students the real materials used in fuel cell device, so students got a unique chance to get in touch with real technology.

◆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))

講師の説明は通訳なしでしたが、途中で出た題材の燃料電池(fuel cell)の部分で5分程度で実験セルと素材の説明を日本語で追加説明しました。

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

Suzuki Akira (鈴木 彰), National Institute for Materials Science, Tsukuba

◆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。):

英語と先進の科学技術に触れる機会を与えるプログラムとのことで協力をさせていただきありがとうございます。中学生向けということで関心をもつ機会を与えられればとの考えでしたが今回は英語コースを選択している中学生ということでかなり集中して聞いていただき(講師の準備も良く)安心出来ました。同行者は今回ほとんど一緒に聞いていただけですが、普通の中高校生にはかなり同行者の協力が必要と感じました。