

(For JSPS Fellow)

Form B-5

Date (日付)

15/10/2013 (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): Darren J. LeClere (ID No. P 12378 )- Participating school (学校名): Shizuoka Prefectural Nirayama High School- Date (実施日時): 11/10/2013 (Date/Month/Year: 日/月/年)- Lecture title (講演題目): (in English) How Solar Energy Works(in Japanese) どうようにして太陽エネルギーは作用するか

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

The lecture was an animated explanation dealing with how solar energy is harvested. The lecture began with an explanation of places I had lived, and my experiences of living there; furthermore, this detailed my education and academic experience. Prior to explaining the mechanism involved in solar cell energy harvesting, the foundational physics of the Bohr model of the atom, and processes involved in electron/photon interactions of atoms were summarized (i.e. conduction band and photovoltaic effect). The electron/photon interactions were described in detail for the absorption and emission processes involved in both the photoelectric effect and the photovoltaic effect. It was also essential to explain the concept of electron bands; mainly the valence band and the conduction band. By animating the foundational physics in a visually simplified way it made it easier to explain the more complex interactions that occur within solar cells. The mechanisms involved in light harvesting using silicon solar cells were then explained by first describing a P-N type junction within a diode. To aid in this explanation, a detailed animation of the flow of electrons through a diode was provided which was then used to describe electron motion within the P-N junction of a silicon solar cell. This animated approach was again employed for describing the mechanisms underlying dye sensitized solar cells. The complex interactions between electrons and photons, along with the accompanying chemical reactions were explained in detail but in a manner which was visually easy for the layman to understand.

- 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) 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))

Projector and Power Point presentation

- ◆ 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 assistant provided Japanese translations intermitently (~20 min. of the lecture)

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

Teruhisa Okuno

- ◆ 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。):

多くのが学生さんが英語の説明を理解していたようなので自分の説明は不要かと思っていたが、

日本語での説明で足りない部分が補足できたという感想を頂き、役にたてたようで幸いだった。

また、化学の知識をどの程度把握しているか判断できない相手にどのように説明すればいいか、

ということを学ぶ機会となって良かったと思う。