

(For JSPS Fellow)

Form B-5

Date (日付) 09/10/2013
(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): Beaucamp, Anthony (ID No. P25-03056)- Participating school (学校名): 市川学園市川高等学校- Date (実施日時): 1:20pm~3:20pm 02/10/2013 (Date/Month/Year: 日/月/年)- Lecture title (講演題目): (in English) Optics Manufacturing in the 21st Century(in Japanese) 21世紀の光学素子の作り方

- Lecture summary (講演概要):

Optics is a very old branch of science, which was pioneered by the ancient Greeks (such as Euclid), and then more deeply studied during the European renaissance (by scientists like Kepler and Newton). But as an industry, optics "boomed" during the 20th century as it enabled many new technologies to emerge (photography, microscopy, astrophysics, lasers, fiber optics, the internet...). Without optics, much of modern technology would never have been possible! And now in the 21st century, Japan is a world leader in the manufacture of ultra precise optics.

In this lecture, the students were taught 4 subjects:

- (1) About the history of discoveries in optics (from Antiquity to the 21st century).
- (2) About the basic principles of optics (such as light reflection and refraction).
- (3) About the fabrication methods used to make mirrors and lenses (including videos showing the use of modern computer controlled machines at Chubu University).
- (4) About the application of optics to X-ray astronomy (which allows the study of supernova explosions and black hole radiation).

Before and during the lecture, students were also shown how to make and align their own reflecting telescope (based on Newton's design), to watch the night sky by themselves.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 110 min (分), Q&A time (質疑応答時間) 10 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))

Used projector presentation, white board for answering questions

- ◆ 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))

For the main part, the presentation was given in English with some Japanese explanations by myself when the students could not understand. Extra assistance was provided by the accompanying person, to translate difficult technical words.

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

Prof. Yoshiharu Namba, Chubu University

- ◆ Other note worthy information (その他特筆すべき事項):

Two weeks before the visit, the students and local teacher were provided with intructions to make a telescope using kits that were provided to them. They brought the assembled telescopes to the school during the visit day, so that I could check the optical alignment and ensure each telescope produced a clear image.

- 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。): 優秀な学生に海外の事情や最新の研究課題を若い外国人特別研究員が話すことは、高校生が海外および未知の学問分野を知り、その魅力から近い将来の高校生の進路に対するガラパゴス化を防ぐ契機となり、本事業の趣旨には大いに賛同する。