

(For JSPS Fellow)

Form B-5

Date (日付)

27/8/2014 (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): Mark Hammonds (ID No. P 13771)

- Participating school (学校名): 観音寺第一高等学校 香川

- Date (実施日時): 20日8月2014年 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Chemistry of the Universe

(in Japanese) 宇宙の化学

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

I was asked to take a 2 hour timeslot and to subdivide my talk loosely into 3 sections – an brief self introduction, a main section about science, and a final section giving some background about myself and my home country, etc. I decided to be flexible on the timing (it's better not to regiment this kind of talk too precisely in my experience).

Science part of my talk was separated into 4 parts. Two general introduction topics were “How big is the Universe” to give an idea of exactly how large stars and galaxies are compared to us here on planet Earth (something which I still find amazing), and “The Stellar Lifecycle” to explain how stars live and die. The latter of these two sections was partially to explain that stars burn hydrogen and produce heavier elements.

My next section “The Interstellar Medium” was to explain how the heavier elements created by stars exist in interstellar space (as gas and dust) and how they form into molecules. This section also contained a brief explanation of spectroscopy and how we use light to identify what chemicals are found in space. Finally , this section showed images of the galaxy taken in several different wavelengths of light (gamma rays, x-rays, visible light, infrared, microwave, radio wave) to show how we see different things at different wavelengths.

This third section also contained a few practical things to help my explanation. I brought along a small glass jar containing olivine (the same mineral which makes up interstellar dust) and an iron meteorite to help explain the things which exist in space. I used a small glass prism to split light to show how we can split light into separate wavelengths. Finally, I borrowed a thermal infrared camera from someone at the University of Tokyo to demonstrate how infrared light is different to visible. This camera was pointed towards the audience, and the students found it especially interesting being able to see themselves in infrared. This allowed me to show that warmer things

are brighter in infrared. I also used it to show how the printing on the cover of a book cannot be seen in infrared, but a warm handprint can.

Finally, I gave a section talking about my own research and the AKARI space telescope, before taking questions. My colleague, Mori-San, was very helpful in translating some of my answers from English to Japanese to help the students better understand. She also helped by translating a couple of questions from students who were more comfortable speaking in Japanese.

Overall, This was a very enjoyable experience, and I think my lecture was quite well received. Both Mori-San and myself enjoyed our time in Kagawa. It is my sincere hope that I may have helped to inspire some students to study physics and astronomy and possibly conduct research of their own someday. If even one of them decides to pursue a career in science because of me, I will consider myself a success.

- Language used (使用言語): 英語

- 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))

Used projector to display powerpoint slides and thermal infrared camera image

◆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))

Extremely helpful assistance from accompanying lab member

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

森(伊藤)珠実

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

Teachers at Kanonji Dai-ichi high school were very friendly and welcoming

- 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。):