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（For JSPS Fellow）

Form B-5

Date（日付）
04/10/2013 （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）: SAM COPPIETERS （ID No. P12756）

- Participating school（学校名）: Ichikawa Gakuen Ichikawa Senior High School

- Date （実施日時）: 04/10/2013 （Date/Month/Year:日/月/年）

- Lecture title（講演題目）: "Experimental Strain Analysis" （in English）

ひずみの測定方法 （in Japanese）

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

Experimental strain analysis is an important engineering tool which is used in a variety of disciplines. In Kuwabara lab such experimental techniques are used to identify plastic material behaviour of sheet metal. A relatively new technique in this field is the so-called Digital Image Correlation (DIC). During the first months of the JSPS fellowship such a dedicated DIC system was built in Kuwabara lab and in this lecture the system is presented.

The first part of the lecture is a tooling up concerning the concept of strain. The simple intuitive 1-dimensional definition is explained and subsequently extended to the concept of a strain tensor. Next, an overview is given on the possible techniques to measure the components of the strain tensor. A classification of the techniques is made based on the physical measurement principle. Two techniques are further elaborated in remainder of the lecture: the classical electrical strain gauge and the novel DIC technique. The measurement principles of both techniques are discussed. Next, the focus is on the execution of a real DIC experiment. The measurement chain is explained by a live experiment: "Measuring the strain in a finger induced by the Japanese OK-sign". It is explained that the Japanese OK-sign (circle made by thumb and pointing finger) is different from the European OK-sign (thumb up). The purpose is to use the DIC system to measure the strain in the finger of student attending the lecture when he makes the Japanese OK-sign. First the finger of the volunteer is covered by white paint and black speckles. Then, the 3D-DIC system is calibrated and pictures are taken of the students OK-sign. Finally, the images are post-processed and the results are discussed.

- Language used（使用言語）: ENGLISH

- Lecture format（講演形式）: PRESENTATION AND LIVE EXPERIMENT WITH A STUDENT OF

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THE HIGH SCHOOL

◆Lecture time（講演時間） 60 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））

2 COMPUTERS, 2 PROJECTORS, 3D-DIC SYSTEM, STRAIN ANALYSIS IN A FINGER

◆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））

ASSISTANCE (2 PERSONS) FOR TRANSPORT OF THE EXPERIMENTAL SET UP, CALIBRATION AND PROVIDNG JAPANESE KEY WORDS

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

MASAZUMI SAITO (M1) AND TOMOYUKI HAKOYAMA (M2)

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

IT FELT GOOD TO CONTRIBUTE TO THIS PROGRAM. IN THIS WAY THE FELLOW CAN MAKE A CONTRIBUTION TO THE JAPANESE SOCIETY

- 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。）:

若手の外国人研究者と高校生の交流は，双方にとって刺激を得られる，非常に素晴らしい事業であると感じた.

改善点としては，外国人に対する配慮がさらに必要であると考える．高校は大学等と異なり小さく目立たない上，バス（日本語のみ）での移動が伴う場合，同行者がいない場合，たどり着くことが困難である.