

(For JSPS Fellow)

Form B-5

Date (日付)

18/02/2018 (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): Chia-Chen Chang (ID No. P17343)

- Participating school (学校名): 埼玉県立熊谷高等学校

- Date (実施日時): 05/02/2018 (Date/Month/Year:日/月/年)

- Lecture title (講演題目): Golden opportunity for biosensing

- Name and title of your company (同行者 職・氏名)

余力, 博士二年

- Lecture format (講演形式):

◆Lecture time (講演時間) 60 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))

I used a powerpoint presentation including several videos that I wanted to share with the students. I also showed gold nanoparticle solution to the students and my colleague helped me conduct the experiment for the aggregation of gold nanoparticles. Finally, I left time for questions and answers at the end of the presentation.

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

This lecture was divided into three parts. I began with a brief introduction of cultures, scenes, and foods in Taiwan. Next I outlined the ideas about how to become a researcher in the field of biomedical engineering. Finally, I presented my recent colorimetric studies of gold nanoparticles (AuNPs) for smart sensor fabrication leading to detection of specific biomolecules. Thus, I explained why gold nanoparticles have significantly different properties than bulk gold. The students understood the synthesis of AuNPs via the video. AuNPs are attractive because they provide unique size and distance-dependent physical properties. The aggregation of AuNPs leads to a huge absorption band shift and a color change from red to blue because of interparticle plasmon coupling. This color change allows AuNPs to be used for biosensing and biomedical applications. Moreover, the read out of colorimetric response is easy, because it can be monitored with the naked eye without the requirement of any sophisticated instrumentation and thus this assay is suitable for the on-site detection. Therefore, I asked my colleague to perform the experiment for the aggregation of AuNPs and to show the color change of AuNP solutions to the students. In addition, I introduced that the integration of plasmonics and aptamer technologies

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can potentially serve the healthcare applications, offering modalities toward simple and inexpensive diagnostic technologies.

- Overall advice or comments to future participants in the program (今後の講師へのアドバイス):

Provide a lot of pictures and videos to explain the contexts. It will help students easily understand what you say.

- Other noteworthy information (その他特筆すべき事項):

It was an enjoyable and educational experience for me as well as the students.

- Impressions and opinions from a company (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。)