

様式 A-1
(FY2023)

2023年10月30日

サイエンス・ダイアログ 実施報告書

1. 学校名・実施責任者氏名: 栃木県立宇都宮女子高等学校 ・ 大關 敬智
2. 講師氏名: Dr. Theodora PAPANASTASIOU
3. 講義補助者氏名: 三室 真帆
4. 実施日時: 2023年10月30日 (月) 15:15 ~ 16:15
5. 参加生徒: 1 年生 38 人、 年 生 人、 年 生 人 (合計 38 人)
備考: 特になし
6. 講義題目:
From transparent electrodes to skin electronics, from Europe to Japan; stories from life & science pathways
7. 講義概要: 皮膚の健康状態を図るために電流を流してみる。より精密に測定するために電極にどの金属を用いるのか、繊維に何を用いるのか、ナノの世界に目を向けて講義。
8. 講義形式:
対面 ・ オンライン (どちらか選択ください。)
 - 1) 講義時間 45 分 質疑応答時間 15 分
 - 2) 講義方法 (例: プロジェクター使用による講義、実験・実習の有無など)
プロジェクター使用による講義
 - 3) 事前学習
有 ・ 無 (どちらかに○をしてください。)
使用教材 講義概要の資料
9. その他特筆すべき事項:
特になし

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※弊会記入欄

Form B-2
(FY2023)
Must be typed

Date (日付)
7/11/2023
(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): Papanastasiou Theodora (ID No. P22765)
- Name and title of the accompanying person (講義補助者の職・氏名)
Mimuro Maho, Master student
- Participating school (学校名): Utsunomiya Girls' High School _____
- Date (実施日時): 30/10/2023 (Date/Month/Year: 日/月/年)
- Lecture title (講義題目):
From transparent electrodes to skin electronics, from Europe to Japan; stories from life & science pathways
- Lecture format (講義形式):
◆ Onsite ・ Online (Please choose one.)(対面 ・ オンライン)((どちらか選択ください。))
◆ Lecture time (講義時間) 45 min (分), Q&A time (質疑応答時間) 15 min (分)
◆ Lecture style (ex.: used projector, conducted experiments)
(講義方法 (例: プロジェクター使用による講義、実験・実習の有無など))
Used projector
- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.
Skin is the largest organ of human body with electrical properties that has been of great interest for a large variety of applications. Recording these properties, like electrical resistance, conductance, and potential, can provide useful information about the sweat gland activity. This is directly linked to thermoregulation and other stimuli, and can contribute to diagnose psychophysiological states and skin condition. Despite the extended biomedical research, there are remaining unclear aspects about skin electrodermal activity, which require the reliable, long-term, multi-site, and multi-person monitoring, with the suitable electrodes. Although the recent advances on skin electronics are significant, there are several issues that hinder the long-term use in ambulatory conditions. Previous works of Someya Group Laboratory have demonstrated state-of-art, ultra-thin, skin conformable, breathable electrodes, using versatile deposition techniques i.e., organic electrospun nanofibers. In my project, I focused on remaining contact issues between soft and rigid parts and the integration of the nanomesh electrodes in patch and textile-based substrates. Overcoming such challenges will contribute to next-generation wearable devices with personalized healthcare features. During the lecture, aspects of my previous

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research were also presented, concerning transparent electrodes based on silver nanowire networks, which demonstrate a superior flexibility compared to traditional bulky electrodes. Overall, we had the chance to discuss about the beauty of materials science, the importance of multidisciplinary studies on breakthroughs in energy and healthcare applications, and the inspiration interplay between life and science

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

I am very grateful to JSPS for this unique chance to give the lecture in Utsunomiya Girls' High School. I was very well welcomed by the school Professors and the students and I am impressed by their interest and their questions. I would also like to thank Ms. Mimuro for her amazing collaboration and assistance in translating and explaining in Japanese. The JSPS Science Dialogue Program was an unforgettable experience for me and I would highly recommend every JSPS Fellow to participate.

- Impressions and comments from the accompanying person (講義補助者の方から、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。):

聞き慣れない内容であったにも関わらず、学生の皆さんが興味を持って講義を聴いてくれて、質問も積極的にしてくれて嬉しかったです。講義補助者として同行しましたが、私にとっても高校生と交流できる非常に貴重な経験となりました。ありがとうございます。