

様式 A-1
(FY2023)

令和5年12月22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: 静岡県立袋井高等学校
2. 講師氏名: Dr. Nils BAEUMER (Mr.)
3. 講義補助者氏名: _____
4. 実施日時: 令和5年12月18日(月) 13:50~15:30
5. 参加生徒: 2年生 41人、 1年生 人、 3年生 人 (合計 41人)
備考: 普通科理系特進クラスの生徒
6. 講義題目: Turning molecules into building blocks for microarchitectures
7. 講義概要: Introduction of yourself and your home country (30 mins.)
About your research (40 mins.)
Q&A (30 mins.)
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 70分 質疑応答時間 30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、実験有
 - 3) 事前学習
有 ・ 無 (どちらかに○をしてください。)
使用教材 講師から事前送信されたハンドアウトとグローサリー、本校教員が作成した資料
9. その他特筆すべき事項:
講義の内容はハイレベルなものであったが、高校生にも理解できる実験の演示をしていただき、理解が深まったのでよかった。また、全体として100分という長い時間だったため、間に実験をしていただいたことで、生徒の集中力も持続した。Q&Aに30分と多めに時間を取っておいたため、生徒と講師のインタラクションが多くできてよかった。

Form B-2
(FY2023)
Must be typed

Date (日付)
19/12/2023 (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): Dr. Nils Bäumer (ID No.P 23701)
 - Name and title of the accompanying person (講義補助者の職・氏名)
Does not apply
 - Participating school (学校名): Shizuoka prefectural Fukuroi High School
 - Date (実施日時): 18/12/2023 (Date/Month/Year: 日/月/年)
 - Lecture title (講義題目): Turning molecules into building blocks for microarchitectures
 - 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) 70 min (分), Q&A time (質疑応答時間) 30 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))
- Slides were presented using a projector. Additionally, a small experiment was performed and models of molecules were used to explain ideas.
- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.

In the beginning of the lecture I gave the students a brief overview of who I am, where I am from and why I chose to do a postdoc in Japan. In addition, I tried to give them some reasons on why they should consider also choosing a profession as a researcher, by pointing out the many challenges that humanity has to tackle using science. In the main part of the lecture I tried to first introduce them to the concept of my research field (supramolecular chemistry) by showing them some examples of supramolecules they may know from their classes, such as the DNA, cell membranes and soap micelles. Afterwards, I tried to slowly introduce the concept of supramolecular binding using the example of water and ice and then using this example to introduce the concept of weak binding in artificial systems. Following that brief introduction I explained some strategies that can be used to design molecules that are suitable for application in the context of supramolecular polymers. I tried to show some concrete examples by showing molecules I previously worked with during my time as a Master and Ph D course student. Afterwards, I spoke to the students about the tools I use in my daily life to investigate molecules

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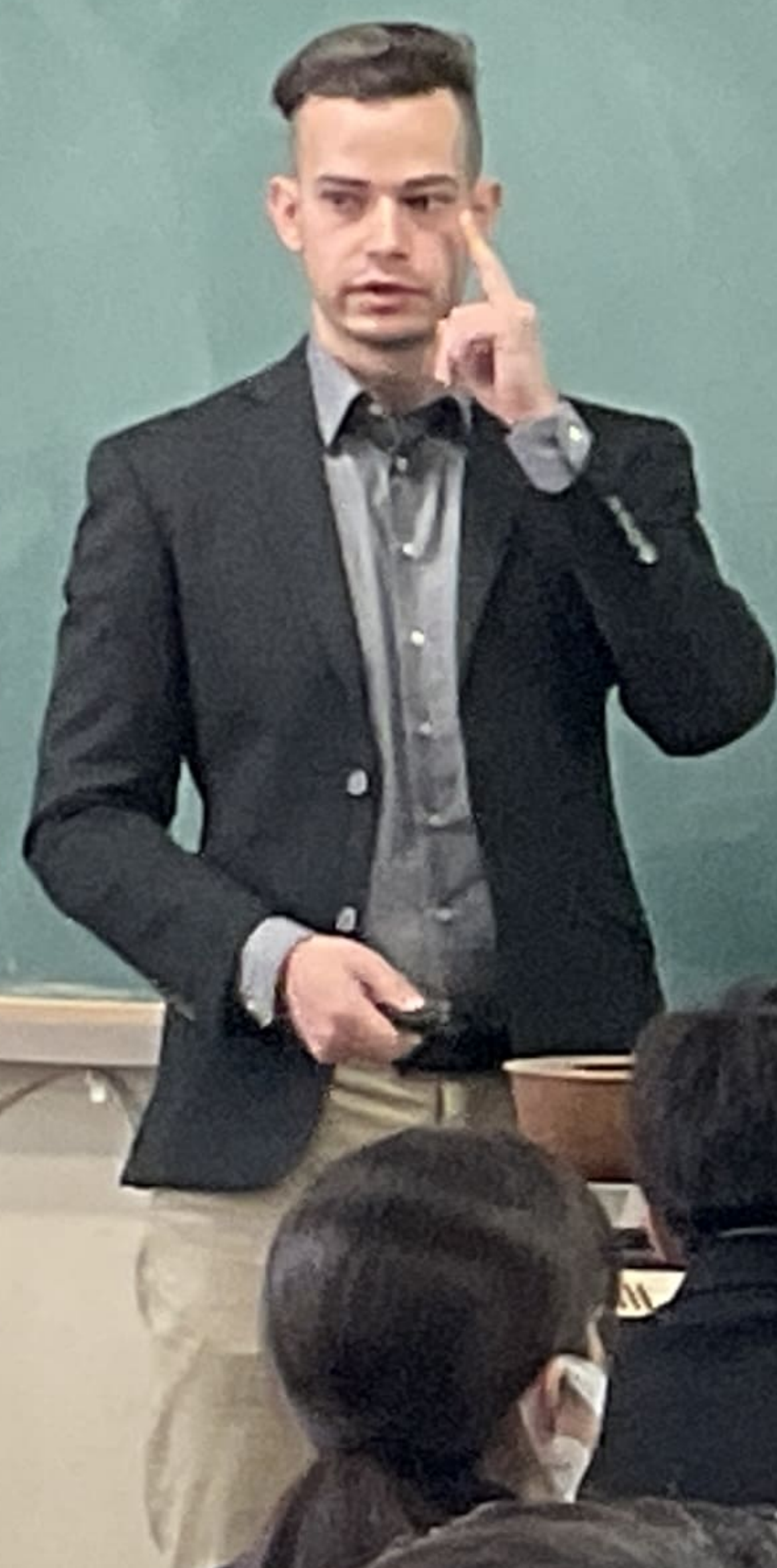
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and their behavior. At this point I explained the concept of light absorption and emission and gave the students a demonstration of how this looks in practice by showing them the emissive properties of supramolecular polymers under UV light irradiation. In the end I concluded my talk by showing the students what other researchers in the field are doing and how supramolecular polymers can be used for various applications like bioimaging, cancer therapy, tissue engineering or optoelectronic devices.

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

None

- 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。): Does not apply



Interaction between light and matter in nature
自然界における光と物質の相互作用

Absorption Spectrum of Chlorophyll a

retinal $\xrightarrow{\text{light}}$ retinaldehyde

Human Eye Anatomy

Labels for Human Eye Anatomy: Sclera, Iris, Cornea, Pupil, Lens, Ciliary body and muscle, Conjunctiva, Retina, Optic nerve, Iris, Muscles, Retinal blood vessels, Vitreous body.

<https://www.ch.ic.ac.uk/local/projects/steer/chloro.html>
<https://www.bennetleyeinstitute.com/retina-honolulu/>

