

Form B-2  
(FY2022)  
Must be typed

Date (日付)  
17/06/2022 (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): Lemoine Kevin \_\_\_\_\_ (ID No.P21727)
- Name and title of the lecture assistant (講義補助者の職・氏名)  
Takahashi Eri
- Participating school (学校名): Suwa Senior High School \_\_\_\_\_
- Date (実施日時): 17/06/2022 \_\_\_\_\_ (Date/Month/Year: 日/月/年)
- Lecture title (講義題目):  
Fluorine in inorganic materials : Applications in lithium-ion batteries
- 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) (total 100 min)  
◆ 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))  
Presentation with powerpoint slides and videos \_\_\_\_\_
- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.  
The current safest option as energy storage in portable devices is the lithium-polymer battery with a non-flammable organic electrolyte and LiCoO<sub>2</sub>, mixture of cobalt and oxygen, as positive electrode. It exhibits adequate electrochemical performances (120 mAh.g<sup>-1</sup>) and a good reversibility during the battery life. But the cobalt used is extracted in poor conditions, for example by children in Africa's cobalt mines. The aim of my research is to find new materials with abundant elements like copper or iron, and a strategy to do that is the use of fluorine (F<sup>-</sup>) as an anion in the material. Fluorine as the strongest electronegativity, it helps giving those abundant elements the potential to be interesting candidates as electrode materials. But the elaboration of fluorinated compounds is not easy, my work is to discover modern or/and easy ways : using for example micro-waves. My passion is to link the crystal structure, atom positions in the material, to understand the properties when it is used in a battery : it is called the structure/properties relationship.

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※弊会記入欄

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

When I got to visit the high school after my presentation, I saw the chemistry club and students there were surprised to not be aware of this presentation. Maybe it is because of COVID and the students invited are restricted by some teachers but it was a bit surprising.

- Impressions and comments from the lecture assistant (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。):