

(For JSPS Fellow)

Form B-5

Date (日付)

7/11/16 (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): Christoffer Karlsson (ID No. P15762)- Participating school (学校名): Yamanashi Prefectural Hikawa High School- Date (実施日時): 17/10/16 (Date/Month/Year: 日/月/年)- Lecture title (講演題目): (in English) Life as a Scientist(in Japanese)

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

Electroactive functional polymers are attractive targets for sustainable energy storage due to their energy efficient and low cost synthesis, and feasible recyclability. Redox polymers and conducting polymers have different modes of charge transport: The former propagate charge through redox hopping close to the formal potential, while the latter exhibit metal-like conduction over a wide potential range. Understanding these processes is crucial when designing new electroactive functional polymers for batteries. The charge propagation in polymers containing redox groups and/or conducting backbone have been studied with interdigitated array microelectrodes, comparing diffusion coefficients of ions and electrons in polymer films during redox cycling. In the emerging field of organic energy storage, 2,2,6,6-tetramethylpiperidine-N-oxyl (TEMPO) redox polymers are among the most promising candidate compounds for the active charge storage component in the positive electrode of next generation batteries. They are a more sustainable alternative to the metal oxide based cathodes used today, which are currently the main limiting factor in battery devices, both in terms of cost and performance, and they are the main contributor to the cost and high carbon footprint of lithium ion batteries. Organic batteries will likely serve as a compliment to lithium ion batteries in the future, among many alternative technologies currently being developed, to satisfy the vast needs of energy storage with different requirements depending on the application.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 45 min (分), Q&A time (質疑応答時間) 45 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))

Projector

- ◆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 by accompanying person

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

Ms. Ayano Nozawa

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

- 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。):