

(For JSPS Fellow)

Form B-5

Date (日付)

18/11/2013 (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): BEN YAHIA HAMDY (ID No. P\_24\*02506)

- Participating school (学校名): Saga Prefectural Chienkan Senior High School

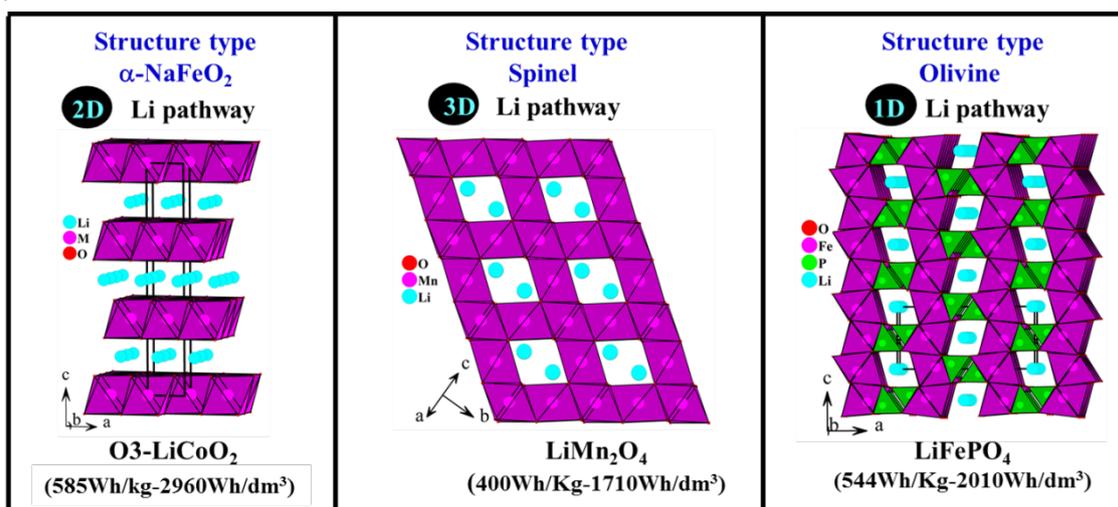
- Date (実施日時): 16/11/2013 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): Importance of crystallography in Material science  
(in Japanese)

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

Crystallography is the science that examines the arrangement of atoms in solids. The use of X-ray crystallography has allowed us to study the chemical bonds which draw one atom to another. By tuning the chemical composition of a material, it is possible to modify its structure and thus change its properties and behavior.

Crystallography has been intensively used for the characterization of materials implemented in lithium ion batteries (LIB). Below a 3D-presentation of the crystal structures of the most used positive electrode materials in LIB.



In our Battery Research Group (AIST-KANSAI), we are focusing on the improvement of the performances of the  $\text{LiCoO}_2$  material. Beside that, we are looking for new materials with higher safety, lower cost, and longer cycle life. During the last two years we have been working on the  $\text{Li}_{2-x}\text{Na}_x\text{M}[\text{PO}_4]\text{F}$  ( $M = \text{Mn, Fe, Co, Ni, and Mg}$ ) family of compounds and we would be happy to

share our results with the Saga Junior High School students.

- Language used (使用言語): English \_\_\_\_\_

- Lecture format (講演形式):

◆Lecture time (講演時間) 70 min (分), Q&A time (質疑応答時間) 20 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))

Powerpoint presentation on LCD large Screen

◆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))

I was assisted by their teacher of English

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

I forgot her name

◆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。): The teacher of English said that she learned many new things related to crystallography and she was very excited about that. She also emphasized to the students how important learning English is for scientists.