

(For JSPS Fellow)

Form B-5

Date (日付)

(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): Dongjoon SONG (ID No. PU14018)
- Participating school (学校名): Meizen high school
- Date (実施日時): 14th/Oct./2014 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): (in English) Journey from beauty of nature to superconductivity by taking a ship named science
- (in Japanese)
- Lecture summary (講演概要): Please summarize your lecture 200-500 words.

Life is a way to someplace where we have not been yet. Although someone lives at one place (like Kyusyu) for his/her whole life, time moves to the future and he/she cannot stay one specific moment. That is, life flows like a river and everybody is the captain of their own ships. Among the people, there exists someone with good eyes, ears, nose and feeling who catches valuable moments and beautiful things in our life. Scientist is such a person and especially interested in nature. In the view point of scientist, nature is just one part of our life and the playground like a "Disney land".

There are many attractions in the "Nature land", such as black hole, history of the earth, journey of salmon, aurora at the North Pole and etc. Among the attractions of nature, superconductivity is one of the most interesting toys. In the superconducting state, not only current can flow without resistance but also magnetic field cannot penetrate inside of superconductor. For example, through the superconducting cable we can transmit electricity from power plant to our city without any energy loss. In addition, by using the magnetic property, we can make magnetic-levitation train which is faster than Shinkansen. Recently, quantum computing technique has been investigated as a new application of superconductivity.

Usual superconducting material shows superconductivity when we decrease temperature down to -240°C. It costs a lot of money to obtain such a low temperature. However, some special materials show superconductivity rather high temperature even higher than liquid nitrogen temperature, -196°C so called high temperature superconductivity. (cf. Liquid nitrogen is easy to obtain because nitrogen takes a possession more than 70% of the air) Since the discovery of high temperature superconductor in 1986, it has been almost 30 years. Still its mechanism has not been revealed yet. In this reason, many physicists study how the high temperature superconductivity takes place and I am one of them.

Of course, understanding high temperature superconductivity itself is a progress of human knowledge and one can win a Nobel prize. Moreover, it is expected that it will give us hint to discover new high temperature superconductor which has very high superconducting transition temperature, hopefully, up to room temperature ($\sim 18^{\circ}\text{C}$). If so, human technology will develop rapidly then we can save energy and resource, and reduce pollution. That is the virtuous circle at which I am aiming as not only a scientist but also one part of nature. We are responsible for maintaining and preserving what nature creates just because it is our precious life!

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 60 min (分), Q&A time (質疑応答時間) 15 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))

Used projector and showed video

◆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 accompanied person

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

Yoshiyuki Yoshida

◆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。):

It was great experience to me. I hope that my talk gave them good impression and feeling about the science and foreign culture. Thanks for the JSPS to give me such a great chance to me.