

(For JSPS Fellow)

Form B-5

Date (日付)

17/11/2017 (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): BAINSLA Lakhan (ID No. P17063)
- Participating school (学校名): Mizusawa High School, Oshu city, Iwate Prefecture
- Date (実施日時): 14/11/2017 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): Spintronic Materials and Devices
- Name and title of your company (同行者 職・氏名)  
WPI AIMR, Tohou University
- Lecture format (講演形式):
  - ◆Lecture time (講演時間) 60 min (分), Q&A time (質疑応答時間) 30 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))  
Power Point Presentation with projector
- Lecture summary (講演概要): Please summary your lecture 200-500 words.

*In the first part of my talk, the geographical background, weather, famous places, food, sports, and religious views about India were discussed. In addition, there was a brief overview of India and Japan relations. In the second part, I explained the basics of magnetism and magnetic materials. How ferromagnetism phenomenon helps to make permanent magnets and the progress in the development of rare earth, based strong permanent magnets were discussed. Basic concepts of spintronic such as origin of Giant magnetoresistance (GMR) and Tunnel magnetoresistance (TMR) effect, and the importance of these effects in spintronic devices explained with simple examples. Also, the development in the Magnetic memory MRAM technology were discussed. How the TMR effect is useful to design magnetic sensor with high sensitivity were also discussed.*

*At the end of talk, the demonstration of a magnetic sensor were given by using different objects such as hand watch and screw driver. I like the questions asked by the students, which shows that they partially understand the concept of spintronic. Questions such as, how about the progress in spintronic research?, how the material research is important to spintronic? were quite interesting. The personal questions asked by students were also very interesting and I feel great to answer them.*

- Overall advice or comments to future participants in the program (今後の講師へのアドバイス):

*I believe this kind of lectures are good for both fellows and participating schools. For fellows, it provides nice opportunity to interact with young minds and give a chance to see and feel the school system in Japan. Regarding presentation, try to keep it very simple and basic so that it is easy to understand for students.*

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

*Fellows must talk about future prospects of their research to generate students' interest.*

- Impressions and opinions from a company (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 is tough for fellow to understand the education level about science and english in the high school. It's better to explain that they doesn't know about physics at al, such as a crystal, electron, spin or magnetic field. Though the students know about the electrical current and resistivity, they don't know the word in english, which they know in Japanese. If science is important topic in this program, it's better to ask fellow that one important physical topic should be learned in the seminar, after that they can go their research topic with easy english and nice illastration.