

(For JSPS Fellow)

Form B-5

Date (日付)

08/11/2017 (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): Pincella Francesca \_\_\_\_\_ (ID No. P17759 )
- Participating school (学校名): Tezukayama Junior & Senior High School \_\_\_\_\_
- Date (実施日時): 08/11/2017 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): The amazing world of nanoscience
- Name and title of your company (同行者 職・氏名)  
Shanoh Takafumi, Master course student
- Lecture format (講演形式):
  - ◆Lecture time (講演時間) 40 min (分), Q&A time (質疑応答時間) 10 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))  
I used a projector for a Powerpoint presentation \_\_\_\_\_
- Lecture summary (講演概要): Please summary your lecture 200-500 words.

At first I introduced myself, my hometown and my education background. I briefly talked about famous Italian scientists and what made me decide to have a career in research. When I was a Physics student, I got interested in the physics of soft matter, and nanoparticles in particular. My research then focused on the synthesis and applications of different types of nanoparticles. I then explained to the students what is a nanoparticle, that is a particle with the typical size of  $10^{-9}$  meters, which means one million times smaller than a millimeter. Such small particles cannot be seen with the naked eye or even with a microscope. In fact, instead of the optical microscope, we need to use an electron microscope, where instead of the light we use electrons to see our nanoparticles. I explained to the students what an electron microscope is and what we can see with that. Afterwards, I gave a few examples of the various applications that nanoparticles can have in real life. The examples came from my past research experience, for example the nanoparticles can be used to purify water from factory waste or to detect diseases earlier than with standard clinical tests. Finally, I introduced my current research topic as a JSPS fellow, which is the degradation of lignin with nanoparticles catalysts. I introduced the concept of catalyst and explained the difference between homogeneous and heterogeneous catalyst. I later explained why

nanoparticles are promising as catalyst for lignin degradation and introduced my strategy for the successful degradation of lignin with magnetite nanoparticles.

- Overall advice or comments to future participants in the program (今後の講師へのアドバイス):  
I would recommend future participants to try to get the student more actively involved.

- Other noteworthy information (その他特筆すべき事項):  
No additional information

- 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。)

・講演を聴く高校生の既習範囲は学校や年度によって様々であり、補足説明を行う際にどの程度まで前提知識として持っているのかを知りたかった。

・当講演を学校側は「化学の講演」として生徒に募集をかけていたようだが、少なくとも自分が知る範囲内の学校及び貴機構と Francesca 氏のやり取り内において(大まかな内容の配分の指示はあったが)どの分野についての講演を想定しているかまでは言及がなかったように思う。貴機構は Francesca 氏の研究分野を把握しているであろうから問題は生じえないかもしれないが、過去の研究分野と現在の研究分野が必ずしも一致するとは限らないので、そのあたりの情報も共有した方が良いのではないかと感じた。

・講演者や学校の負担が大きくなるかもしれないが、事前にレジュメを配布したり講演後に講演で使用したパワーポイント資料を配付したりした方が、講演内容に興味を持った高校生の理解がより深まるのではないかと感じた。