

Form B-2
(FY2022)
Must be typed

Date (日付) 2023/1/19

(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): CHEN Shuoye (ID No. P220885)

- Name and title of the lecture assistant (講義補助者の職・氏名)

- Participating school (学校名): Aichi prefectural Kariya High School

- Date (実施日時): 2023/1/17 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

A wonderful world of wood science

- Lecture format (講義形式):

◆☒ Onsite ・ ☐ Online (Please choose one.) (☐ 対面 ・ ☐ オンライン (どちらか選択ください。))

◆Lecture time (講義時間) 75 min (分), Q&A time (質疑応答時間) 45 min (分)

◆Lecture style (ex.: used projector, conducted experiments)

(講義方法 (例: プロジェクター使用による講義、実験・実習の有無など))

Using projector for the presentation, and let students experience the wooden materials

- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.

The lecture can be divided into four sections. In the first section, I briefly had a self-introduction about my hometown and my stay in Japan.

And then I talked about the reason why I started to study wood science is because of my hobby: playing the traditional musical instrument called Erhu. And I brought this musical instrument and played it in front of the students.

After that, I introduced three topics of my studies that I have conducted at undergraduate, master, and post-doc stage, respectively. The first one is potential of compressed wood as a substitute for Erhu soundbox. The ebony and rosewood are used for making the Erhu soundbox. However, those wood species are quite rare and expensive. On the other hand, Japanese cedar wood is abundant and cheap with low mechanical properties. Therefore, I compressed the cedar wood specimens to enhance their mechanical properties. The results showed that the compressed cedar wood had quite similar mechanical properties as ebony and rosewood. I suppose the compressed cedar wood could be a substitute for ebony and/or rosewood that is used for making Erhu soundbox.

The second one is making wooden bilayer for building bioinspired wooden architecture. When the humidity of the environment changes from high to low. The conifer cone will open its cone scales. It is because of their unique bilayer structure (passive layer and active layer). Inspired by such a bilayer structure, I have successfully made wooden bilayer material. And now I am trying to make a wooden architecture using wooden bilayers that can respond to changes in humidity.

The third one is using AI technology to analyze cell deformation. The anatomical features of wood influence its mechanical properties. As the cell is the basic structural unit of wood, the cell deformation during the mechanical test should be precisely analyzed. Therefore, I have built an AI model that can conduct the segmentation of wood cells. By using such a model, I am able to simultaneously measure thousands of cells during the mechanical test and analyze their intensity of deformation.

After the third section, I gave three suggestions for students who might want to become a researcher/scientist in the near future. The first one is to find the topics that you are truly interested in. The second one is to conduct the interdisciplinary fusion in the next step., The third one is always to keep thinking about your originality to become the “only one” type of researcher/scientist.

Finally, the last section is the question time and I brought some samples to let them experience my studies. And then this lecture was closed.

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

As I brought several wooden samples to let students experience it, I felt they started to be interested in wood science. I hope my lecture can let them enjoy the wonderful world of wood science and make a chance for them to study wood science.

- Impressions and comments from the lecture assistant (講義補助者の方から、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。):