

様式 A-1  
(FY2025)

2025 年 12 月 5 日

## サイエンス・ダイアログ 実施報告書

1. 学校名: 愛知県立刈谷高等学校
2. 講師氏名: Dr.Bapan ADAK
3. 講義補助者氏名: 寺本 好邦先生
4. 実施日時: 2025 年 12 月 5 日 (火) 16:00 ~ 18:00
5. 参加生徒: 1年生 8人、 2年生 13人、 3年生 0人 (合計 21人)  
備考: (例: 理数科の生徒)
6. 講義題目: 生分解性のスマート食品包装紙
7. 講義概要: 研究者の研究歴やインドについて。スマート食品包装紙の構造や物質。ナノ素材や生分解性素材について。
8. 講義形式:  
 対面 ・  オンライン (どちらか選択ください。)
  - 1) 講義時間 90分 質疑応答時間 20分
  - 2) 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)  
プロジェクター使用による講義
  - 3) 事前学習  
 有 ・  無 (どちらか選択ください。)  
使用教材: 教員作成
9. その他特筆すべき事項:  
特になし

**Form B-2**  
**(FY2025)**  
**Must be typed**

Date (日付)  
11/12/2025 (Date/Month/Year: 日/月/年)

**Activity Report -Science Dialogue Program-**  
(サイエンス・ダイアログ 実施報告書)

- Fellow's name (講師氏名): Bapan ADAK (ID No. P24098)
- Name and title of the lecture assistant (講義補助者の職・氏名)  
Prof. Yoshikuni TERAMOTO
- Participating school (学校名): Aichi Prefectural Kariya High School
- Date (実施日時): 05/12/2025 (Date/Month/Year: 日/月/年)
- Lecture title (講義題目):  
High barrier, smart, and sustainable flexible food packaging materials
- 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) 90 min (分), Q&A time (質疑応答時間) 30 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))  
A projector was used for showing my PowerPoint presentation slides; I asked some questions during my presentation to make it more interactive; Finally, there was a Q&A session
- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.

In my lecture, I first gave a brief introduction about myself, including my country, my hometown and where I live, and the school where I studied. I then outlined my educational background and explained my motivation for pursuing a career in research. I provided a summary of my previous research experience, starting with my B.Tech work on sustainable natural coloration of silk fabrics, followed by my M.Tech research on all-cellulose composites. I then described my Ph.D. research, which focused on polyurethane nanocomposites for weather-resistant and gas-barrier films and laminates used in aerostat envelopes for defense applications. After that, I talked about my professional career, including six years in two Indian industries in managerial roles, where I was involved in several product development activities. I also introduced my postdoctoral research at NTU Singapore on polymer/clay coatings for high-performance, metal-free flexible food packaging and recycling.

Next, I introduced my current JSPS postdoctoral research at Kyoto University on biopolymer nanocomposite-coated paper for high-barrier, smart, and sustainable food packaging materials.

In this part, I focused on key aspects such as: why paper-based packaging is important, the advantages of biopolymers and the specific polymers used, and the role and benefits of nanomaterials. I also discussed the targeted properties, sustainable approaches adopted in the work, the properties achieved so far, and the biodegradability of the developed materials, as well as ongoing research and future perspectives. The lecture concluded with a Q&A session, where students asked questions about my research topics, career path, and life as an international researcher.

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

- Impressions and comments from the lecture assistant (講義補助者の方から、本プログラムに対する意見・感想等がありましたら、お願いいたします。):

I am very grateful to Prof. Yoshikuni Teramoto for kindly visiting the school as a lecturer's assistant. Since I had to give my talk online for personal reasons, his presence on site was extremely valuable. I am sure the students benefited from being able to ask questions and discuss points in Japanese with him whenever needed. Prof. Teramoto was happy in assisting me in the lecture.