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（学校用）

様式 A-1

(FY2025)

2025 年　　11 月　　6 日

サイエンス・ダイアログ　実施報告書

1. 学校名:　岩手県立釜石高等学校・佐藤　早也華、大和田梨沙

2. 講師氏名:　Dr.Sabuj Kanti DAS

3. 講義補助者氏名: 佐藤　虎太郎

4. 実施日時:　2025 年　　10 月　　27 日（月）　　10 : 35　～　12 : 15

5. 参加生徒:　　2 年生　25 人、　　年生　　人、　　年生　　人（合計　25 人）
   備考:（例:理数科の生徒）

6. 講義題目:Nano Porous Materials for CO2 capture and Utilisation

7. 講義概要:

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　　70　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、実験

   3) 事前学習
      ☑有 ・□ 無 （どちらか選択ください。）
      使用教材: Key points, summary, and slides

9. その他特筆すべき事項:

For Web posting

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Form B-2
(FY2025)
Must be typed

Date（日付）05/11/2025
（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）: Sabuj Kanti Das （ID No. P24038 ）

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

- Participating school（学校名）: Iwate Prefectural Kamaishi High School

- Date（実施日時）: 27/10/2025
（Date/Month/Year:日/月/年）

- Lecture title（講義題目）: Nano Porous Materials for Sustainable Energy and Environmental Solutions for Tomorrow

- 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） 45+45 (90) min（分）, Q&A time（質疑応答時間） 5+5 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））
Both (Projector and Experiments)

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

The lecture entitled "Nano Porous Materials for Sustainable Energy and Environmental Solutions for Tomorrow", was delivered under the JSPS Science Dialogue Program (FY2025) at Iwate Prefectural Kamaishi High School. The motivation of the talk was mainly introducing students to the interconnected roles of science, technology, and global collaboration in building a sustainable future.

I started with my self-introduction which followd by a brief academic and research journey spanning India, France and Japan, emphasizing the value of multicultural learning and the importance of mastering multiple languages-especially English-for international scientific communication and understanding.

The presentation explored the essence of scientific curiosity, encouraging students to question

the world around them and recognize science as both a creative and transformative pursuit. Quoting Prof. C. V. Raman, I described science as “the highest form of creative art,” highlighting how curiosity drives discovery and innovation.

A central theme of the talk was nanotechnology, where “small is big.” Here I explained how materials at the nanoscale exhibit unique electronic and surface properties, enabling groundbreaking applications in energy and environmental fields. Special attention was given to porous nanomaterials, defined by their internal voids and channels, which make them excellent candidates for gas adsorption, catalysis, and energy conversion.

After that, I addressed global energy and environmental challenges-rising CO_2 emissions, the need for renewable resources, and efficient materials for clean technologies. Examples of advanced research on metal–organic frameworks (MOFs), Covalent -organic-frameworks (COFs) and their role in selective CO_2 capture, catalytic transformations, and sustainable hydrogen production were discussed. In this part, I have presented two interesting COFs synthesis reactions using special apparatus. The enjoyed the instant colour changing effect of chemical reaction.

The lecture also introduced fuel-cell technology, demonstrating how hydrogen can serve as a clean, renewable energy carrier of the future.

In conclusion, students were encouraged to embrace science with curiosity and responsibility. Beside this I reminded them that scientific knowledge has the power to heal or harm the planet-urging future generations to “use atoms to build a better world.” The session ended with a call to action: “Think globally, act locally, keep learning, stay curious and make a difference.”

◆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。）:貴重な体験ができ、楽しかったです。


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