

Sandip Institute of Technology and Research Centre An Autonomous Institute

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CGPA Score:3.11

Department of Mechanical Engineering Academic Year 2023-24

Report on “Recent advancements in enhancing the photo catalytic activity of two-dimensional nanocomposite”

1. Event Title: "Expert Lecture on Recent advancements in enhancing the photo catalytic activity of two-dimensional nanocomposite”

2. Event Date: 12th December 2023

3. Event Conduction Duration: 12:15 PM to 1:00 PM

4. Event Venue: Online Platform, Google meet

5. Event Resource Person Details: Dr. Pankaj Koinkar
Department of Optical Science
Tokushima University, Japan

6. Name of Event Coordinator: Dr. Chandrmani Yadav

7. Event Objectives & Outcomes

Objectives of Activity:

To understand technique to enhance Photocatalytic activity of two-dimensional nanocomposite.

Outcomes of Activity:

Participants understood the technique to enhance Photocatalytic activity of two-dimensional nanocomposite.

8. Description of Event:

Mechanical Engineering Department, SITRC has organized an expert lecture for the students of Mechanical Engineering on 12th December 2023. The resource person was Dr. Pankaj Koinkar, Vice Director at Center for International Research and Educational Cooperation (CIREC) and Associate Professor, Department of Optical Science Tokushima University, Japan. The resource person briefed the Photocatalytic activity of two-dimensional nanocomposite also enhancement technology. So, this lecture helped students to understand enhancement technology in Photocatalytic activity. The vote of thanks was given by Dr. Chandrmani Yadav.

The event was attended by about **132** students along with HoD Prof. (Dr.) Sachin G. Ghalme, and departmental faculty members.

Event Photos:

PHOTOCATALYST
A photocatalyst is a substance that uses light energy to facilitate a chemical reaction.

In the presence of light and water, photocatalyst creates strong oxidation agent and electronic holes to breakdown the organic matter to carbon dioxide and water.

Chlorophyll of plants is a typical natural photocatalyst. Chlorophyll captures sunlight to turn water and carbon dioxide into oxygen and glucose.

The diagram illustrates the photocatalytic process. Light energy is absorbed by a photocatalyst, exciting electrons from the valence band to the conduction band, leaving holes. These electrons and holes react with water and carbon dioxide to produce harmless products like starch and organic compounds, while breaking down harmful organic pollutants into radicals and eventually carbon dioxide and water.

Tokushima University

12:28 PM | geg-rfsq-zta

Resource person delivered speech on Photocatalyst

Photocatalyst: Redox Reaction

The diagram shows a semiconductor with a valence band (VB) and a conduction band (CB). UV light excites electrons from the VB to the CB, creating holes. These electrons participate in reduction reactions (e.g., $2H^+ \rightarrow H_2$), while the holes participate in oxidation reactions (e.g., $H_2O \rightarrow \frac{1}{2}O_2$).

Depending on the redox potential of organics in wastewater as well as the position of valence and conduction band, either oxidation or reduction or both processes take place.

The efficiency of photocatalysis depends on how well one can prevent this charge recombination


Tokushima University

12:29 PM | geg-rfsq-zta

Resource person delivered speech on Redox Reaction


Dr. Chandrmani Yadav
Event Coordinator


Dr. S. G. Ghalme
HOD
Dept. of Mech. Engg.


Prof. (Dr) M. M. Patil
Principal,
SITRC

