

School of Chemical Sciences Goa University

Report on Talk by: Dr. Chinnakonda S. Gopinath on 12th June 2023

The School of Chemical Sciences organised a seminar on 12th June 2023 at 4:00 pm on the topic: 'A Move towards Practical Artificial Photosynthesis'. The talk was delivered by Prof. Chinnakonda S. Gopinath, currently working as outstanding scientist at CSIR-National Chemical Laboratory, Pune.

Prof. Gopinath earned his Ph.D. from IIT Madras in the year 1993. Dr. Gopinath has published more than 230 research papers in esteemed scientific journals and has 8 patents to his credits. His research interest includes surface science, heterogeneous catalysis, solar to chemical energy conversion, new catalytic materials by simple methodology and nanomaterials. His work has been cited by researchers worldwide, highlighting its impact and significance. He has been honoured by various prestigious organizations and received funding from various funding agencies.

In his talk Prof. Gopinath explained the use of nano materials in presence of visible light for converting carbon dioxide to methanol and formaldehyde. He presented his studies which proved that using catalyst as a film provides much better conversion of carbon dioxide than using as suspension or powder. He showed his efforts on scale up, which could have potential to address the danger of rising amount CO₂ in atmosphere.

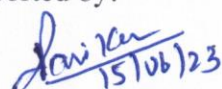
The seminar was coordinated by Prof. Sunder N. Dhuri, Vice Dean Academic (SCS) and introduction of speaker was done by Prof. V. M. S. Verenkar, Dean, SCS.


The talk was attended by 20 teachers, 13 students and 2 external participants.


Overall talk was informative providing insights, specially about the practical challenges for this topic and motivating young researchers to explore this research topic on artificial photosynthesis, especially in view of the increasing CO₂ levels and climate change occurring globally.

The flyer, abstract, photos and attendance sheet are attached below.

Reported by:



15/06/23
Dr. P. S. Volvoikar
Secretary, SCS


Prof. S. N. Dhuri
Vice Dean, SCS


15/06/2023
Prof. V. M. S. Verenkar
Dean, SCS



Flyer:




**School of Chemical Sciences
GOA UNIVERSITY**

**Cordially Invite you for the Special Lecture
On the Topic**

“A Move Towards Practical Artificial Photosynthesis”

Resource Speaker: Dr. Chinnakonda S. Gopinath, FASc

Deputy Director - NCL,
Outstanding Scientist,
Catalysis & Inorganic Chemistry Division,
Professor, Academy of Scientific & Innovative Research (AcSIR)
CSIR-National Chemical Laboratory, Pune.



Date: 12/06/2023 Time: 4:00 pm
**Venue: Chemistry Auditorium,
School of Chemical Sciences
Goa University**

Dean,
School of Chemical Sciences

Abstract

How to achieve unassisted, economical, scalable, and sustainable artificial photosynthesis to liquid fuels/products with high solar-to-fuel efficiency (STFE), to address carbon-neutral economy? An attempt has been made to simulate few critical aspects of green photosynthesis in an artificial leaf device. Apart from broad solar light absorption, critically, extent of charge separation at heterojunctions, and charge utilization decides the STFE. Towards this end, sunlight absorbing BiVO₄ quantum dots (BVQDs) is assembled from ionic-precursors into TiO₂ pores, and integrated them structurally and electronically. BVQDs in TiO₂ pores leads to all-inorganic system with sub-quadrillion heterojunctions in 1 cm² device (contains ~1 mg TiO₂+BiVO₄) and facilitates artificial photosynthesis. We demonstrate about 30 % STFE with wireless BiVO₄-TiO₂ artificial leaf device to HCHO and CH₃OH, and address scalability and sustainability. Assuming no change in STFE, 6.74 m² device is expected to convert 1 kg/h CO₂ into C1-oxygenates in sunlight.

Attendance:

LECTURE: A MOVE towards practical Artificial Photosynthesis by Dr. Chinnakonda S. Gopinath. (CSIR-NCL, Pune) DATE & TIME: 12/06/2023 4:00 PM		
SR NO.	NAME	SIGN.
1	Sunder N. Dhun	
2	B.R. Srinivasan	
3	Leo F.B. D'Souza	
4	Bidhan A. Shinkar	
5	Prajesh S. Varkar	
6	Manasi Ugvekar	
7	Shubhlaxmi K. Naik	
8	Namrata Kumari	
9	Disha Gauns	
10	Samidha S. Nandekar	
11	Dipika Gosavi	
12	Pranav Varkar	
13	Sudesh M. Morajkar	
14	Sagar N. Patil	
15	Rupesh Patil	
16	Dr Kiran Dhanekar	
17	Anjali Nagvenkar	
18	Deepika Karmalkar	
19	Nitesh Soshi	
20	Vinod Manohar	
21	Diptesh G. Naik	
22	Kan K. Kadum	
23	Rohan K. Kunkalkar	
24	Prachi Torney	
25	Savita Kundalkar	
26	Varita Kunkalkar	
27	Rupam Kunkalkar	
28	Dr. Kedar V. Nandekar	
29	Shrikant R. Naik	
30	Ms Gayatri D. Kothare	
31	Kathleen C. Pinto	
32	Priyesh Khobrevkar	
33	Mohit Khandeparkar	
34	Vishnu R. Mani	
35	V. M. S. Venkatar	