



Department of Applied Sciences Gauhati University

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NOTICE / INVITATION

It is indeed a pleasure to bring it to the kind notice of one and all concerned that the Department of Applied Sciences is organizing a lecture cum interactive session with Prof C S Gopinath, FASc, Chairman and Chief Scientist, Catalysis Division, Head, Center of Excellence on Surface Science, and Professor, Academy of Scientific and Innovative Research (AcSIR), National Chemical Laboratory, Pune, under the aegis of TEQIP-III, the prestigious World Bank project being implemented through the MHRD, and awarded to the GUIST.

Faculty colleagues, Scientific Officers, and Research Scholars of relevant Departments in particular, and all others in general who find the topic interesting, are cordially invited to participate in the interactive session. While a brief write-up on the Speaker and the Talk may be found in the attachment herewith, the schedule is given below:

Day & Date: Friday, Sept 7, 2018

Time: 3:00 PM

Venue: Seminar Hall, new GUIST Building

Best regards

S/d- Head, Department of Applied Sciences

Dr. Chinnakonda S. GOPINATH, FASc

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About the Speaker:

Dr. Chinnakonda Gopinath is currently working as Senior Principal Scientist at the National Chemical Laboratory (NCL), Pune, and Head, Center of Excellence on Surface Science at NCL, Pune. He is also Professor of Chemical Sciences, Academy of Scientific and Innovative Research (AcSIR), New Delhi, India. He obtained his Masters from Madurai Kamaraj University on 1986 and Ph. D. from IIT, Madras on 1993. His research interests include surface science, heterogeneous catalysis, solar to chemical energy conversion, new catalytic materials by simple methodology and nanomaterials. He has published more than 190 research articles, six patents granted, filed 2 patents and produced 18 Ph. D. graduates. Currently, seven PhD students are working at different stages in his group.

He is an elected fellow of the Indian Academy of Sciences, Bangalore. He is a recipient of few awards, including the Alexander von Humboldt (AvH) fellowship (1995-97), CNRS visiting Professor at Univ. Lille on 2010, CRSI Bronze Medal on 2008, Teaching in Erasmus-Mundus sponsored courses. He served as an Editorial Board member of the Journal of Chemical Sciences and currently serving in the Indian Journal of Chemical Technology.

About the Talk:

Scalable Solar Hydrogen Generation with Quasi Artificial Leaf Approach

Chinnakonda S. Gopinath

Catalysis Division, National Chemical Laboratory, Pune, India.

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Solar hydrogen production by water splitting is one of the “holy grail” of chemistry (long-standing problems) listed in a special issue published by the Accounts of Chemical Research¹ on 1995 by Allan Bard et al. Water splitting to hydrogen is yet to be exploited, in spite of large amount of research work in the past five decade, after the first report published by Fujishima and Honda.²



A wireless device based on quasi-artificial leaf concept, comprising Au on TiO₂ electrode sensitized by PbS and CdS quantum dots (QD), was demonstrated to show solar hydrogen.³ Under one sun conditions, 4.3 mA/cm² photocurrent generation, 5.6 % power conversion efficiency, and spontaneous H₂ generation were observed at no applied potential.. There is a very good possibility that this device can be scaled to bigger sizes to produce large amount of hydrogen. However, many more challenges are ahead and some of them will be discussed.

References

1. A. J. Bard, G. M. Whitesides, R. N. Zare, F. W. McLafferty, *Acc. Chem. Res.* **1995**, *28*, Issue 3.
2. A. Fujishima, K. Honda, *Nature* **1972**, *238*, 37
3. K. K. Patra, B. D. Bhuskute, C. S. Gopinath, *Sci. Rep.* **2017**, *7*, 6516.