



SRI SATHYA SAI INSTITUTE OF HIGHER LEARNING

(Deemed to be University)

Frontiers in Nano Science, Technology & Application

FiNSTA 2014 | 20 - 22 Dec 2014

INTERNATIONAL CONFERENCE

Prasanthi Nilayam Campus

Department of **Physics**

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Conference Chairs

Prof. Dr. A. M Rao

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Raman Research Institute, Bangalore

Prof. Dr. Srikanth Nadadur

National Institute of Environmental Health Sciences, USA





PHYSICS

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Prof. Dr. M S Ramachandra Rao
Indian Institute of Technology, Madras

Prof. Dr. M. Krishnamurthy
Tata Institute of Fundamental Research, Mumbai

Publications Chair

Prof. Challa Kumar
Louisiana State University, USA

Prof. Dr. Tanu M Rattan
Department of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthinilayam

Plenary Speakers

Prof. Ajay Kumar Sood
Department of Physics Indian Institute of Science, India

Prof. Jared M Brown
Department of Pharmaceutical Sciences, University of Colorado, USA

Prof. Anne Kahru
National Institute of Chemical Physics and Biophysics, Estonia

Prof. Tata Narasinga Rao
Centre for Nanomaterials, ARCI, India

Prof. Josef Franz Hormes
Center for Advanced Microstructures and Devices, Louisiana State Univ., USA

Prof. Yang-yuan Chen
Institute of Physics, Academia Sinica, Nankang, Taipei, Taiwan

Prof. Anurag Srivastava
Advance Material Research Group, CNTL, ABV-IIITM Gwalior, India

Prof. D D Sarma
Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore, India

Prof. Prabhu N
Chennai Medical College Hospital and Research Centre, Tiruchi-

rapalli, India

Prof. Morinobu Endo
Electrical & Electronic Engineering, Shinshu University, Japan

Keynote Speakers

Prof. Maurizio Ferrari
IFN – CNR, CSMFO Lab, Italy

Prof. Sampath Srinivasan
Department of Inorganic and Physical Chemistry, IISc, Bangalore, India

Prof. Narayana Rao D
School of Physics, University of Hyderabad, India

Prof. Reji Philip
Optics Group, Raman Research Institute, India

Invited speakers

Prof. Noriyoshi Matsumi
School of Materials Science, Japan Advanced Institute of Science and Technology, Japan

Prof. Jian He
Department of Physics and Astronomy, Clemson University, USA

Prof. Tersilla Virgili
Dipartimento Di Fisica, Politecnico Di Milano, Italy

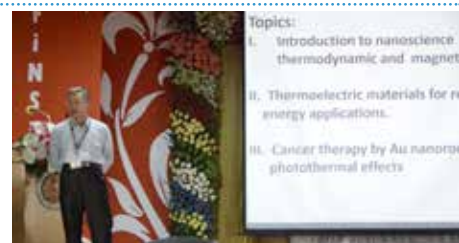
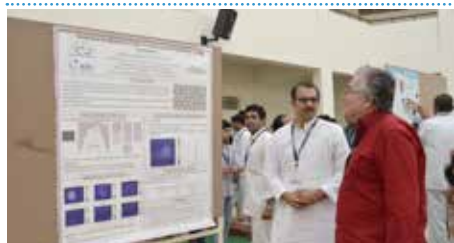
Prof. Anuradha Mudipalli
National Center for Environmental Assessment, USA

Prof. Vijayamohan K. Pillai
Central Electro Chemical Research Institute, Karaikudi, India

Prof. Somenath Mitra
Dept. of Chemistry and Environmental Sciences, New Jersey Institute of Technology, USA

Prof. Jyoti Ranjan Mohanty
Dept. of Physics, IIT- Hyderabad, India

Prof. Raman Vedarajan
School of Materials Science, Japan Advanced Institute of Science





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and Technology, Japan

Prof. S. Venugopal Rao

Advanced Centre of Research in High Energy Materials, University of Hyderabad, India

Prof. Shivakiran Bhaktha B.N

Department of Physics, Indian Institute of Technology- Kharapur, India

Prof. M .S. R Rao

Dept. of Physics, Indian Institute of Technology- Madras, India

Prof. Binaya Kumar Panigrahi

Materials Physics Division, IGCAR, India

Prof. Kandalam V Ramanujachary

Department of chemistry, Rowan University, USA

Prof. Ilaria Bargigia

CNST@Polimi, Istituto Italiano di Tecnologia, Italy

Prof. Avinash B Shivanandareddy

Soft Condensed Matter Laboratory, Raman Research Institute, India

Prof. Sushil Mujumdar

Tata Institute of Fundamental Research, India

Prof. Manohar Rao

JPK Instruments AG, Science Park 1, Singapore 118223, Singapore

Prof. Sai Santosh Kumar Raavi

Department of Physics, Indian Institute of Technology Hyderabad, India

Dr. Pradyumna Mulpur

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

Prof. Neeleshwar S

University School of Basic & Applied Sciences, GGS Indraprastha University, India

Prof. G. V. S. Murthy

Materials Science and Technology Division, CSIR-National Met-

allurgical Laboratory, India

Prof. Ajay Ram Srimath Kandada

Center for Nano Science and Technology @ PoliMi, Istituto Italiano di Tecnologia

Dr. L. A. Avinash Chundari

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

Dr. Sai Kiran Aditha

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

Dr. Sandeep Patnaik

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

Dr. Murli Krishna Molli

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

Dr. C. Prathibha

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

Prof. V. Sai Muthu Kumar

Dept. of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, A.P., India

FINSTA'14 PROGRAMME

(Plenary: 45 min, Keynote: 30 min, Invited: 20 min, Contributor: 15 min)

DAY 1: [20th Dec. 2014]

Morning Session: Nanomaterials - Mechanical, Electrical, Optical Properties and Applications

1. Photonic Glasses and Confined Structures (Keynote)

M. Ferrari
IFN – CNR, CSMFO Lab, Italy

2. Organoboron Electrolytes and Their Efficient Lithium Ion





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Transporting Properties

Noriyoshi Matsumi

School of Materials Science, Japan Advanced Institute of Science and Technology, Japan

3. A Defect Engineering Approach toward Higher Performance Mg₂(Si,Sn) Thermoelectric Materials

Jian He, Tiejun Zhu

Department of Physics and Astronomy, Clemson University, USA

4. Role of Ligands in a Hybrid CdSe Nanocrystal-Organic Interface

Tersilla Virgili, Inmaculada Suarez-lopez, Arrigo Calzolari, Alice Ruini, Alessandra Catellani, Juan Cabanillas-gonzalez, Larry Luer, Reinhold Wannemacher, Barbara Vercelli, Giuliano Angella, Francesco Tassone

Dipartimento Di Fisica, Politecnico Di Milano, Italy

5. Probing Dirac Carriers in Graphene (Plenary)

Ajay Kumar Sood

Department of Physics Indian Institute of Science, India

Afternoon Session: Nanomaterials: Biomedicine and Ecological implications

1. Nanoparticle-Immune Interactions from a Biophysical to Physiological Perspective (Plenary)

Jonathan H Shannahan, Ramakrishna Podila, Pranita Katwa, Apparao M Rao, Jared M Brown

Department of Pharmaceutical Sciences, University of Colorado, USA

2. Recombinant Metal Sensing Bioluminescent Bacteria Novel Tools in Nanotoxicology of Metal Containing Nanomaterials (Plenary)

Anne Kahru, Angela Ivask, Olesja Bondarenko, Kaja Kasesmets

National Institute of Chemical Physics and Biophysics, Estonia

3. Nanomaterials for Energy and Water Management: The Indian Perspective (Plenary)

Tata Narasinga Rao, Centre for Nanomaterials, ARCI, India

4. Toxicity and Health Effects of Engineered Metal Nanopar-

ticles A Risk Assessment Perspective for Cadmium-based Quantum dots

Anuradha Mudipalli

National Center for Environmental Assessment, USA

5. Nanostructured Catalysts for Electrochemical Energy Systems (Keynote)

Sampath Srinivasan

Department of Inorganic and Physical Chemistry, IISc, Bangalore, India

DAY 2: [21st Dec. 2014]

Morning Session: Superconductivity, Magnetism, and Energy

1. Nanoparticles are different: Characterization of Metallic Nanoparticles by X-ray Absorption Spectroscopy (Plenary)

Josef Franz Hormes

Center for Advanced Microstructures and Devices, Louisiana State Univ., USA

2. Field Induced Transformation of Carbon Nanotubes to Graphene Quantum Dots and Graphene Nanoribbons

Vijayamohan K. Pillai

Central Electro Chemical Research Institute, Karaikudi, India

3. Nanostructure Thermoelectric Materials, their Manipulation, Study and Applications for Renewable Energy (Plenary)

Yang-yuan Chen

Institute of Physics, Academia Sinica, Nankang, Taipei, Taiwan

4. Development of Nanotechnology for Environmental and Energy Related Applications

Sagar Roy, Madhulina Bhadra, Megha Thakkar, Smruti Raghunath, Ziquan Wang, Somenath Mitra

Dept. of Chemistry and Environmental Sciences, New Jersey Institute of Technology, USA

5. Magnetism at Nanoscale: Nano-small meets Ultra-fast

Jyoti Ranjan Mohanty

Dept. of Physics, IIT- Hyderabad, India

6. Application of TiO₂+WO_x Nanotubes in Photoelectrochemical Water Splitting





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Raman Vedarajan\$, Shoto Ikeda, Noriyoshi Matsumi
\$School of Materials Science, Japan Advanced Institute of Science and Technology, Japan

7. Non Microscopic Differentiation of Acid-Fast from Non Acid-Fast Bacteria using a Surface Plasmon Coupled Emission Platform

Pradyumna Mulpur\$, Sairam Yadavilli, Ramakrishna Podila, Apparao M Rao, Venkataramaniah Kamiseti
\$Department of Physics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilyam, A.P., India

Afternoon Session: Photonics

1. Ultrafast Laser-Induced Plasmas for Nanoparticle Generation: Comparison with Conventional Chemical Routes (Keynote)

N. Smijesh, Kavya H. Rao, P. Sreekanth, Reji Philip\$
\$Optics Group, Raman Research Institute, India

2. Edge Passivation Effect on Electronic Properties of SiC Nanotube (Plenary)

V.Ganga Avinash Reddy, Sidharth Suman, Sumit Kumar Jain, Anurag Srivastava\$
\$Advance Material Research Group, CNTL, ABV-IIITM Gwalior, India

3. Optical Field Confinement in Periodic 1d and 3d Dielectric Structures (Keynote)

Narayana Rao D
School of Physics, University of Hyderabad, India

4. Plasmonic Nanostructured Substrates for Explosives Detection Prepared with Ultrashort Laser Pulses

S. Venugopal Rao
Advanced Centre of Research in High Energy Materials (ACRHEM), University of Hyderabad, India

DAY 3: [22nd Dec. 2014]

Morning Session: Nanomaterials: Synthesis and Applications

1. Never-ending Surprises in Photoluminescence from Semiconductor Nanocrystals (Plenary)

D D Sarma

Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore, India

2. Microbial Mediated Silver Nanoparticles and its Antimicrobial Assay including HIV -1 Neutralization (Plenary)

Prabhu N, Chennai Medical College Hospital and Research Centre, Tiruchirapalli, India.

3. Nanostructured Sol-Gel Thin Films for Nanophotonic Applications

Pratyusha Das, Subhabrata Ghosh, Anirban Sarkar, Prahalad Kanti Barman, Shivakiran Bhaktha B.N\$
Department of Physics, Indian Institute of Technology- Kharagpur, India

4. State-of-the-arts Science and Applications of Carbon Nanotubes toward Design and Safe Nano (Plenary)

Morinobu Endo, Electrical & Electronic Engineering, Shinshu University, Japan

5. Enhancement of Electron Field Emission Properties of Novel Nanostructured Materials

Binaya Kumar Panigrahi, Materials Physics Division, IGCAR, India

6. Novel Catalytical Materials for Sustainable Energy

Kandalam V Ramanujachary
Department of chemistry, Rowan University, USA

7. Time-Resolved Diffuse Optical Spectroscopy beyond 1100 nm as a Tool for the Characterization of Biological Tissues

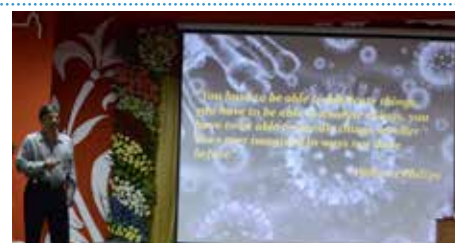
Ilaria Bargigia\$, Alberto Tosi, Andrea Bahgat Shehata, Adriano Della Frera, Andrea Farina, Paola Taroni, Alberto Dalla Mora, Franco Zappa, Rinaldo Cubeddu, Antonio Pifferi
\$CNST@Polimi, Istituto Italiano di Tecnologia, Italy

8. Gold Nanorods Embedded Discotic Nanoribbons

Avinash B Shivanandareddy\$, Sandeep Kumar, Lakshminarayan V
\$Soft Condensed Matter Laboratory, Raman Research Institute, India

9. Exotic Stochastic Processes in Random Amplifying Nanophotonic Media

Sushil Mujumdar\$, Ravitej Uppu
\$Tata Institute of Fundamental Research, India





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Afternoon Session Applications

1. Advancement in Scanning Probe Microscopy, A New Versatile Tool for Probing Mechanical, Chemical, Electrical and Optical Property in Nano-Resolution.

Manohar Rao\$, Heiko Haschke, Torsten Jahnke
\$JPK Instruments AG, Science Park 1, Singapore 118223, Singapore

2. Nanoscience@SSSIHL- Research activities currently undergoing at SSSIHL

Sai Muthukumar, C. Avinash, Sandeep Patnaik, A Sai Kiran, M Murali Krishna, C Pratibha
Department of physics, SSSIHL

3. Impact of Molecular Charge-Transfer States on Photocurrent Generation in Solid State Dye-Sensitized Solar Cells Employing Low-Band-Gap Dyes

Sai Santosh Kumar Raavi\$, Decampo P., Wehrenfennig C, M. J. P. Alcocer, G. Sadoughi, L.M. Herz, H.J. Snaith, A. Petrozza
\$Department of Physics, Indian Institute of Technology Hyderabad, India

4. Ultrafast Photo-excitation Dynamics in Organo-Lead Tri-halide Perovskites: A Photophysical Perspective for Optoelectronics

Ajay Ram Srimath Kandada\$, Giulia Grancini, Valerio D'Innocenzo, Michele De Bastiani, Guglielmo Lanzani, Annamaria Petrozza
\$Center for Nano Science and Technology @ Polimi, Istituto Italiano di Tecnologia., Italy

5. Synthesis and Characterization of PbTe Nanostructure Thermoelectric Materials

Neeleshwar S\$, Khasimsaheb B, Srikanth M, Sivaiah Bathula, Bhasker Gahtori, Ajay Dhar, Amrithapandian S, B K Panigrahi, A.M. Rao
\$University School of Basic & Applied Sciences, GGS Indraprastha University, India

6. Characterization of Nano structures in Functional Materials

G. V. S. Murthy
Materials Science and Technology Division, CSIR-National Metallurgical Laboratory, India

Closing ceremony

Felicitations of senior Teachers for their contribution to the field of science

The closing ceremony witnessed the felicitations of senior teachers from the department of physics, SSSIHL for their valuable contribution and dedication to the field of physics. Following teachers were felicitated with a memento by Prof Dr. KBR Varma, the Vice Chancellor of Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam.

Prof. K B R Prasad
Prof Dwaraka Rani Rao
Prof P C Sood
Prof Debendranath Sahoo
Dr Tanu Mimami Rattan
Dr B. Komalamba
Prof K Srinivasan
Shri Nanjundan Kumar

BEST POSTER AWARDS

Sponsored by Material Research Society (MRS), Singapore

The poster presentation was organized which was spread across the three days of conference. The best 30 posters were awarded the BEST POSTER AWARD sponsored by the materials research society. Each winner was awarded a MRS Best poster certificate named after a senior teacher from SSSIHL who have distinguished themselves with years of service to the institute, and also a cash prize of Rs. 5000.

1 **Award name:** Prof. Bhairavamurthy prize

Delegate Name: Mr. Surya Sameer Guduru
Affiliation: Center for Nanoscience and Technology @ Polimi, Istituto Italiano di Tecnologia, Italy
Title of the Paper: Femto second laser fabrication of binary fresnel lenses on polymeric 1d-photon crystal for wavelength selective light harvesting in optofluidic systems



2 Award name: Prof. C J M Rao prize

Delegate Name: Dr. Raghava Reddy Kakarla
Affiliation: School of chemical and biomolecular engineering, The University of Sydney, Australia
Title of the Paper: Novel efficient visible light semi-conducting nanostructured photo catalysts for the degradation of organic pollutants

3 Award name: Prof. C L Mahajan prize

Delegate Name: Ilaria Bargigia
Affiliation: CNST@Polimi, Istituto Italiano di Tecnologia, Italy
Title of the Paper: development of a flexible time resolved photoluminescence spectroscopy system with high temporal resolution

4 Award name: Prof. A V Lakshmi Narasimham prize

Delegate Name: Dr. K. Kesavan
Affiliation: Institute of Pharmaceutical sciences, Guru Ghasidas University, India
Title of the Paper: Phase transition nano – sized emulsion for ocular delivery: evaluation of anti- bacterial activity

5 Award name: Dr. Jayaprada prize

Delegate Name: Mr. Gopala Krishna Podagatlapalli
Affiliation: ARCHEM, south campus, University of Hyderabad, India
Title of the Paper: Ag nanomaterials fabricated through laser ablation in aqueous media using as axicon

6 Award name: Prof. K B Naidu prize

Delegate Name: Dr. Ashwin Boddeti
Affiliation: Center for Excellence in Basic Sciences Health Center, UM-DAE, India
Title of the Paper: Anderson localisation in nearly periodic photonic crystal structures

7 Award name: Prof. K B R Prasad prize

Delegate Name: Mr. Jaideep Katuri
Affiliation: Liuis Soler Juliane Simmchen, Samuel Sanchez Smart, Germany
Title of the Paper: Influence of planar surfaces on motion of self-propelled particles

8 Award name: Dr. Komalaba prize

Delegate Name: Dr. Sreeramulu Valligatla
Affiliation: CNR-IFN CSMFO Lab, Trento, Italy
Title of the Paper: Erbium activated di electric multi-layer structures fabricated by RF sputtering

9 Award name: Prof. N R Krishna swami prize

Delegate Name: Ms. M Leena
Affiliation: Department of Physics, Presidency College, India
Title of the Paper: Evaluation of acoustical parameters of Titanium oxide – ethylene glycol nanofluid using ultrasonic velocity measurements

10 Award name: Prof. K Srinivasan prize

Delegate Name: Dr. Prashanthi Kovur
Affiliation: Department of Chemical and Materials Engineering, University of Alberta, Canada
Title of the Paper: Science and technology of smart materials for smart living

11 Award name: Prof. M Nanjundaiah prize

Delegate Name: Dr. T N V KV Prasad Tollamadugu
Affiliation: Nanotechnology Laboratory, ANGRAU, Tirupathi
Title of the Paper: Agri-nanotechnology: Applications of nanotechnology in agriculture and allied sciences

12 Award name: Prof. M K Sundaresan prize

Delegate Name: Lakshman Ventrapragada
Affiliation: Department of Physics and Astronomy, Clemson University, USA



Title of the Paper: Gold nanoparticles- graphene composites by laser ablation for alkaline fuel cells

13 Award name: Prof. Mukunda Rao prize
Rs.5000.00

Delegate Name: Shashidhar T G

Affiliation: Department of Physics, Sri Sathya Sai Institute of Higher Learning, India

Title of the Paper: Laser sintering of silver nanoparticles

14 Award name: Prof. Muralidhara Rao prize

Delegate Name: MS. Kushboo Sharma

Affiliation: Department of Physics, Govt. Engineering College, India

Title of the Paper: Efficient bulk heterojunction photovoltaic device based on modified PCBM

15 Award name: Prof. P C Sood prize

Delegate Name: Dr. Sreedhar D

Affiliation: Dept. of Chemical Engineering, Sreenidhi Institute of Science and Technology, India

Title of the Paper: Investigation on chiral dependency of graphene nanoribbon based conducting properties

16 Award name: Prof. M Radha Swami prize

Delegate Name: Mr. Yash Raval

Affiliation: Department of Biological Sciences, Clemson University, USA

Title of the Paper: Interaction of Enterotoxogenic E.Coli with porcine intestinal epithelial cells in the presence of bio functionalised iron oxide nanoparticles

17 Award name: Prof. E S Ramamurthy prize

Delegate Name: Mr. Shashikanth Shukla

Affiliation: Department of Botany, University of Allahabad, India

Title of the Paper: Prediction and validation of gold

nanoparticles against plant growth promoting Rhizo bacteria: A step towards development of nanofertilizers

18 Award name: Prof. Ramesh Sharma prize

Delegate Name: Dr. Pranav Tripathi

Affiliation: University of Witwatersrand, Johannesburg, South Africa

Title of the Paper: Interconnected micro/mesoporous ordered carbon as advanced adsorbent for the removal of water pollutant Bisphenol A

19 Award name: Prof. Ranga Rao prize

Delegate Name: Ms. Laveena Dsouza

Affiliation: Center for Nano and Material science, Jain University, India

Title of the Paper: AFM study of Nanoscale interaction between N719Dye and CdSe quantum dot for enhanced open circuit potential in a HSC

20 Award name: Shri Ryuko Hira prize

Delegate Name: Ms. Prathibha

Affiliation: Department of Physics, Sri Sathya Sai Institute of Higher Learning, India

Title of the Paper: TiO₂ nanotubes: A novel and efficient defluoridation adsorbent

21 Award name: Prof. D Sahoo prize

Delegate Name: Mr. Aditya Kurdekar

Affiliation: Department of Physics, Sri Sathya Sai Institute of Higher Learning, India

Title of the Paper: Surface plasmon coupled emission as a novel analytical platform for the sensitive differentiation of thiolated amino acids

22 Award name: Prof. T Tiwari prize

Delegate Name: Ms. Lisa Naik

Affiliation: Guru Govind Singh Indraprasta University, India

MgSiO₂ as a novel material for enhancement of





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fluorescent signal

23 Award name: Dr. K S Umesh prize

Delegate Name: Mr. Aditya Jayaraman
Affiliation: Department of Physics, Sri Sathya Sai Institute of Higher Learning, India
Title of the Paper: Effect of sulphur doping on the thermo electric properties of Tin selenide – a first principle study

24 Award name: Prof. U S Rao prize

Delegate Name: Sri Harsha A
Affiliation: Department of Chemistry, Sri Sathya Sai Institute of Higher Learning, India

Title of the Paper: Mycosynthesis of gold nanoparticles and evaluation of their catalytic activity

25 Award name: Prof. V Panduranga Rao prize

Delegate Name: Mr. D Praveen Kumar
Affiliation: Department of Material Science and Technology, Yogi Vemana University, India
Title of the Paper: Highly efficient hydrogen production using cu modified TiO₂ nanotubes in aqueous ethylene glycol under solar irradiation

