RAMSADAY COLLEGE

Department of Physics

In Collaboration with IQAC Presents

One-day National Webinar on

"Recent Research and Opportunities in the Field of Renewable Energy Sources"

Chief Patron:

Dr. Deb Kumar Mukherjee
Principal,
Ramsaday College, Amta, Howrah

Convenors:

Dr. Sukdev Dolai (Dept. of Physics)
E-mail: sukdevdolai.physics@gmail.com
&
Mr. Mrinal Kanti Debnath (Dept. of Physics)
E-mail:mkdebnath77@gmail.com

Organizing Members:

Mr. Abhoy Mondal (H.O.D), Mr. Sampad Mondal,
Dr. Sudipa Upadhaya, Mr. Sujit Das,
Mr. Sumit Kumar Chakraborty, Mr. Tanmoy Maity,
Miss. Karabi Chatterjee.

Resource Persons:

Dr. Praveen Kumar
Assistant Professor
School of Material Science,
Indian Association for the Cultivation of Science
Kolkata, India

Dr. Chiranjib Nayek
Founding Director,
Orrand Technologies Pvt. Ltd. (Alien Solar),
Co-founder & CEO,
Alienion Technologies Pvt. Ltd. (Alienion)
Kolkata, India.

Date: 26th September, 2020, 3.00 PM to 5.30 PM

Platform: Google meet & YouTube

Contact: 9933762531, 9231894617 E-mail: physrc1946@gmail.com

Registration link:
https://forms.gle/GxobWHFgNzQYnmU88

E-Certificates will be issued to the registered participants after successful submission of feedback form

Last date of registration:20/09/2020
Extended date of registration-25/09/2020

One-day National Webinar

On

"Recent Research and Opportunities in the Field of Renewable Energy Sources"

Organized by

Department of Physics of Ramsaday College
in collaboration with IQAC
Amta, Howrah-711401

Convenors:

Dr. Sukdev Dolai
Assistant Professor
Dept. of Physics,
Ramsaday College

&

Mr. Mrinal Kanti Debnath
Assistant Professor
Dept. of Physics,
Ramsaday College

Date: 26th September, 2020. Time: 3.00 PM

Organizing Members:

Mr. Abhoy Mondal (H.O.D), Mr. Sampad Mondal,
Dr. Sudipa Upadhaya, Mr. Sujit Das,
Mr. Sumit Kumar Chakraborty, Mr. Tanmoy Maity,
Miss. Karabi Chatterjee.

Technical Assistant

Mr. Arup Dhara
Librarian, Ramsaday College, Amta, Howrah

Programme Schedule

2.40 PM -2.55 PM: Entry to the meeting link

Inaugural Session

1. Introductory address **Dr. Sudipa Upadhaya**
   Assistant Professor, Department of Physics, Ramsaday College, Amta, Howrah. (3.00PM-3.05PM)
2. Inaugural address by
   Dr. Deb Kumar Mukherjee
   Principal, Ramsaday College, Amta, Howrah.
   (3.05PM-3.10PM)
3. Opening address: **Dr. Subrata Raychaudhury**
   IQAC Co-ordinator, Ramsaday College, Amta, Howrah.
   (3.10PM-3.15PM)
4. Address by **Mr. Abhoy Mondal**
   Assistant Professor & Head,
   Department of Physics, Ramsaday College, Amta, Howrah.
   (3.15PM-3.20PM).

Technical Session-I

- Introduction to the 1st Speaker by **Dr. Sudipa Upadhaya** (3.20PM-3.25PM)
- **Lecture-I:** 50 Min.(3.25PM-4.15PM)
- Questionnaire Session by **Dr. Sukdev Dolai**-10 Min. (4.15PM-4.25PM)

Speaker- Dr. Praveen Kumar

Dr. Praveen Kumar is working as an Assistant Professor at the Indian Association for Cultivation of Sciences (IACS), Kolkata, and also a Chair of the Marie Curie Alumni Association (MCAA) Indian Chapter funded by the European Commission. He is a member of the National Academy of Sciences India (NASI) and also an Editorial Board Member of the Materails Letter, Elsevier. He received his Ph.D. from the Department of Physics, Indian Institute of Technology, Delhi in 2011, followed by the postdoctoral studies at ISOM, UPM Madrid, Spain. He is a recipient of several recognized awards and fellowships, few of them are DAE Young Achiever Award (2019), Quarterly Franklin Membership by London Journals Press (2019), International Reviewer, Russian International Affairs Council (RIAC) (2019), Micro Internal Travel Grants (MITG), European Commission (Oct 2018), BRICS Young Scientist Award (2017), Marie Curie Postdoctoral Fellowship (2012), INSPIRE Faculty Award (2013), 11 Best oral/poster award in various international conferences and Gold Medal in M. Sc. (Physics) (2003). He is elected as a sectional committee member for Materials Science in the Indian National Science Congress Association for the year 2019-20. Dr.

Kumar's research contribution covers a broad spectrum of Materials Science and Engineering including III-V semiconductors, 2D-Materials, MXenes, Carbon Nanostructures, etc, for various energy harvesting (PEC water splitting, CO_2 reduction, Broadband photodetectors) & storage (Supercapacitors) applications. He has authored 85 publications in peer-reviewed international journals, 01 patent, more than 75 in conference proceedings, 11 books/chapters, and delivered around 52 invited/oral talks around the globe.

Lecture Topic:

Materials Engineering for Renewable H_2 Generation

Dr. Praveen Kumar
School of Materials Science, Indian Association for the Cultivation of Science,
Kolkata -700032, India
Email: praiitr@gmail.com, Praveen.kumar@iacs.res.in

Abstract:

Due to the current deficit in the demand and supply of fossil fuels followed by their polluting effect on the environment, a search for renewable fuels is one of the demanding issues of research in the current scenario. Hydrogen is one of the potential alternatives to fill this deficit and also to replace fossil fuels as far as the transport sector is a concern. As of now, 96 % of H_2 is been produced using fossil fuels (Methane reforming and Coal gasification) as a feed-stock, only 4% of H_2 is coming through water electrolysis. Therefore, to reduce the dependency on fossil fuels, we have to innovate smart, affordable, efficient, and stable materials heterostructures, to increase the H_2 generation from water at commercial scale. In my talk, I will address some of these issues and also will discuss selected successful recent materials innovations in our laboratory at IACS.

References:

1. Nature Communications Chemistry 2 (2019) 4,
2. Renewable & Sustainable Energy Reviews (2020),
3. ACS Applied Materials & Interfaces 12 (2020) 37218.
4. ACS Applied Materials & Interfaces 12 (2020) 28792.
5. Trends in Analytical Chemistry (Accepted 2020).
6. ACS Applied Energy Materials (2020),
7. Advanced Optical Materials (2020) 2000228,
8. Chemical Engineering Journal 397 (2020) 125415,
9. ACS Applied Materials & Interfaces, 12 (2020) 13797,
10. International J. Hydrogen Energy 45 (2020) 103.
11. Journal of Materials Chemistry C 7 (2019) 13182,
12. Solar Energy 193 (2019) 715,
13. Advanced Materials Interfaces (2019) 1900923,
14. Trends in Analytical Chemistry, 114 (2019) 171,
15. Trends in Analytical Chemistry, 110 (2019) 97-115,
16. ACS Sustainable Chem. & Eng. 7 (2019) 505,

Technical Session-II

- Introduction to the 2nd Speaker by **Mr. Mrinal Kanti Debnath** (4.25PM-4.30PM)
- **Lecture-II:** 50 Min. (4.30PM-5.20PM)
- Questionnaire Session by **Mr. Sampad Mondal** 10 Min. (5.20PM-5.30PM)

Speaker- Dr. Chiranjib Nayek

Dr. Chiranjib Nayek pursued his Ph.D from IIT Madras and after that he joined as a post-doctoral fellow at Department of Physics, United Arab Emirates University, UAE. During his post-doctoral research period, he collaborated with Max-Planck-Institute for Chemical Physics of Solids, Dresden, Germany and Saha Institute of Nuclear Physics, Kolkata, India. Not only he publishes his research work in high impact international journals, but also holds a US patent. After completing his post-doctoral research, he came back to India and joined as a founding director at Orrand technologies Pvt. Ltd., brand name as AlienSolar, a solar based company. Highly motivated by next generation future technologies, he Co-founded another company, Alienion Technologies Pvt. Ltd., brand name as Alienion, lithium ion battery based company on alternative power resource for small scale electric vehicle, solar energy field, domestic and small products.

Lecture Topic: **Battery is the next generation fuel**

Dr. Chiranjib Nayek

Founding Director,

Orrand Technologies Pvt. Ltd. (Alien Solar),

Co-founder & CEO,

Alienion Technologies Pvt. Ltd. (Alienion)

Kolkata, India.

Email: chiranjibnayek@gmail.com

Abstract:

To battle with the threatening climate change, to reduce carbon emission and oil dependence, whole world is leaning towards renewable, pollution free energy (clean energy) sources. This change and up-gradation is happening very fast! Rechargeable battery based next generation storage device is going to be the nucleus of booming industrial sectors, such as electric vehicle, solar energy field, domestic inverter batteries, and small products. With the increase of uses of renewable energy sources and electric vehicles, the demand of storage cell and storage device is drastically enhancing. To full-fill such immense demand, lithium ion based battery cells/devices will play a great role. Automatically, research and development in the field of battery/ storage device has explored a new era.

Concluding Session

Concluding remarks: **Dr. Sudipa Upadhaya,** Assistant Professor, Department of Physics, Ramsaday College, Amta, Howrah.

(5.30PM- 5.33PM)

Closing Session

Vote of Thanks by **Mr. Abhoy Mondal,** Head of the Department of Physics, Ramsaday College.

(5.33PM- 5.35PM)

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~:Kindly mute your microphone and switch-off your video till the end of the lecture:~

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